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USE OF VIDEOTAPED INSTRUCTIONAL TELEVISION FOR TEACHING STUDY SKILLS IN A UNIVERSITY SETTING.
BY- NEIDT, CHARLES O.
COLORADO STATE UNIV., FT. COLLINS
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THE PRESENT STUDY WAS UNDERTAKEN TO ASSESS THE DESIRABILITY OF USING VIDEOTAPED INSTRUCTION TO SOLVE THE PROBLEM OF PROVIDING UNIFORMLY CONSISTENT STUDY SKILLS COURSES TO UNIVERSITY STUDENTS. THIS FIRST PHASE INVOLVED PRODUCING TEN 30-MINUTE VIDEOTAPED LECTURES. THE SECOND PHASE CONSISTED OF OFFERING THE VIDEOTAPED COURSE TO NINE GROUPS THROUGHOUT FOUR ACADEMIC QUARTERS. APPROXIMATELY 700 STUDENTS TOOK PART IN THE STUDY. ONLY 20 PERCENT OF THE PARTICIPATING STUDENTS INDICATED THEY WOULD PREFER CONVENTIONAL LECTURES IN CONTRAST TO 25 PERCENT WHO INDICATED THEY LIKED THE TELEVISION PRESENTATION. THE FOLLOWING CONCLUSIONS WERE REACHED--(1) STUDENTS REACT FAVORABLY TO STUDY SKILLS MATERIALS PRESENTED VIA VIDEOTAPED TELEVISION INSTRUCTION, (2) VIDEOTAPED TELEVISION INSTRUCTION IS AN EFFECTIVE MEANS FOR RAPIDLY GROWING UNIVERSITIES TO MEET THE NEEDS OF THEIR STUDENTS IN THE STUDY SKILLS AREA, (3) LOWER-CLASS STUDENTS WITH AVERAGE OR LOWER ACHIEVEMENT REFLECT THE GREATEST BENEFITS FROM ENROLLING IN A VIDEOTAPED STUDY SKILLS COURSE, (4) THE LEARNING OF STUDY SKILLS MATERIAL IS ENHANCED WHEN STUDENTS ARE GIVEN MEANINGFUL ASSIGNMENTS TO PERFORM IN THE CLASSROOM FOLLOWING A VIDEOTAPED LECTURE ON STUDY SKILLS, (5) VIDEOTAPED STUDY SKILLS INSTRUCTION CAN BE OFFERED SUCCESSFULLY THROUGHOUT THE DAY, AS WELL AS DURING THE EVENING HOURS, AND (6) CREDIT IS NOT A NECESSARY CONDITION FOR SUCCESSFUL STUDY SKILLS EXPERIENCES. (TC)

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USE OF VIDEO TAPE INSTRUCTIONAL TELEVISION FOR TEACHING STUDY SKILLS IN A UNIVERSITY SETTING

December 31, 1966

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
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Use of Videotaped Instructional Television
For Teaching Study Skills in a University Setting

NDEA Title VII
Grant Number OE-7-15-0050-286

Report Prepared
by
Charles O. Neidt, Head,
Department of Psychology and Director,
Human Factors Research Laboratory
Colorado State University

Project Directors
Charles O. Neidt
Frank J. Vattano

December 31, 1966

The research reported herein was performed pursuant to a grant with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Human Factors Research Laboratory

Colorado State University

Fort Collins, Colorado

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INTRODUCTION

A substantial amount of research evidence has been assembled supporting the procedure of teaching study skills courses to university students using traditional teaching methods. This evidence, reviewed in detail in the next section of this report, indicates that students who have taken such courses achieve relatively higher levels in subsequent courses and reflect more favorable attitudes toward education than students who have not taken such courses. Despite the research evidence, however, many college and university students do not have study skills courses available. The following reasons are among those cited for this situation: 1) There is a shortage of qualified personnel for teaching the courses; 2) Time of instructors is demanded for subject matter areas; 3) It is difficult to maintain consistently high caliber presentations in this area; and 4) Study skills courses are offered at times of the day which will not conflict with other courses and this greatly inconveniences the instructors, thus making the teaching of such courses unpopular.

The present study was undertaken to assess the desirability of using videotaped instruction to solve the problem of providing uniformly consistent study skills courses to university students. By videotaping the presentations of a qualified study skills instructor, a permanent recording of a specialist becomes available for all those desiring to capitalize on his knowledge of the area. Although the actual number of qualified instructors of study skills classes is not available, it is reasonable to assume that any college or university will have relatively few in its employ. This usually means that if an institution wishes to offer a study skills course, it must either hire an instructor from the limited market or educate a present member of its faculty to take over this function.

Some colleges and universities have appointed graduate students to teach study skills to undergraduates. Although this procedure is less costly than employing senior faculty members for this purpose, a problem of continuity immediately results. As graduate students complete their programs of study, other students must be recruited and oriented to replace them. Such a practice assumes that graduate students are not only available for this purpose, but can become sufficiently competent to teach in this area. Videotaped study skills courses should be useful in alleviating the problems of continuity of offerings and uniformity in the qualifications of instructors.

Many colleges and universities have experienced difficulties surrounding the scheduling of conventional study skills courses. When study skills courses are scheduled during the "more popular" hours of a school day, they often conflict with required classes making it impossible for many students to enroll. Likewise, many instructors of study skills courses are involved in the teaching of academic coursework and this prevents them from teaching study skills courses at these times. A program for offering study skills is needed which will allow the course to be taught at various times of the day in a variety of settings without occupying the time of instructors involved in teaching academic coursework. Videotaped instruction, if shown to be an effective method for teaching study skills courses should contribute substantially toward alleviating this need.

Statement of the Problem: The problem investigated in the present study can be restated as follows:

"To assess the desirability of using videotaped instruction to provide a uniformly consistent study skills course to university students."

Review of Related Research: The research literature in the study skills area consists of reviews of study skills course evaluations, surveys of current practices, analyses of study skills materials, reports of current evaluations of specific study skills courses and descriptions of study skills inventories. Only those publications having a direct relationship to the present study are included in this review.

In her 1960 review of twenty-two published evaluations of study skills courses, Entwisle (12) reported the following:

1. A study-skills course will usually be followed by improvement.

2. A study-skills course will be most beneficial for students desiring to take it.

3. Students wishing to take a study-skills course, but prevented from doing so, and, therefore, presumably of comparable motivation to those enrolled, fail to show significant improvement.

4. Any gains noted will not necessarily be related to either the content or the duration of the course.

In 1952, Tresselt (47) surveyed 30 colleges to ascertain how study skills courses were being taught, the qualifications of instructors, and the desirability of offering such courses. The following results were obtained from the 16 schools responding to the questionnaire:

1. Methods of presenting material--lecture, interview, discussion, individual testing and laboratory activity.

2. Level of students--majority were freshmen.

3. Method of enrollment--in five schools students entered voluntarily, in seven schools students were referred and in four schools students entered by both voluntary means and by referral.

4. Credit and meetings per week--0 to 6 hours per week and 0-3 credits. Crude mode--2 hours per week and 0 credits.

5. Assistants--one assistant per 10 students was required.

6. Level of education of instructors--twelve held their M.A. and four their Ph.D.

In addition, one or more of the reporting schools indicated that 1) grades of students in their course increased .5 letter grade on the average; 2) eighty per cent of enrollees increased their reading rate; 3) the course reduces drop-outs; 4) students have a desire for assistance in this area; 5) the course is generally beneficial for those who want to learn.

In 1953, Blake (3) surveyed an unreported number of colleges and universities to ascertain the status of study skills courses in higher education. Blake found that the number of study skills programs was increasing and that twenty-four schools were planning to initiate new programs the following year. It was pointed out that most study skills programs have grown in haphazard fashion since experience in this field is not reported systematically. Major results of the survey were:

1. Most programs are available to only a limited part of the school population.
   42% are for voluntary and referred students
   40% are for only voluntary students
   11% are for all freshmen
   6% no response

2. Study skills programs in general are plagued by a remedial aura; but all students could benefit.

3. Program planning with students is conspicuously lacking.

4. Research is inadequate; research is needed in: Program evaluation, program improvement, and validation of diagnostic instruments.

5. Fifty-one per cent of the programs surveyed do not give academic credit for participation in the formalized parts of the programs.

6. Most programs do not have specially trained workers for them.

7. Most programs are not adequately publicized.

Laycock and Russell (18) analyzed thirty-eight how-to-study manuals designed primarily for secondary school pupils. All specific exercises, examples and discussions of study habits and skills were classified into twenty-four general categories. The analysis indicated that thirty-five specific practices in sixteen of the major categories were mentioned in manuals twenty or more times. The authors indicated that few of the suggestions made in the manuals had any basis in research. They pointed to a number of contradictions and several "questionable" recommendations. They further stated that in half of the manuals, seven of the twenty-four major categories of study skills practices were omitted. Their overall conclusions were as follows:

1. The number of published manuals indicates the important place given by educators to the development of study habits and skills in pupils.

2. Progress has been made in analyzing possible elements constituting good study habits and skills.

3. The analysis reveals emphasis on reading, taking examinations, habits of learning, outlining and note-taking, classroom activities, memorizing, using the library, and the physical and psychological conditions for studying.

4. Disagreement and a lack of research are apparent.

5. Additional investigation is needed into almost all areas of how-to-study programs.

Creaser (8) investigated changes in study habits and attitudes during a study-habits course using a Q-sort test as a criterion. The test included items on study skills, attitudes about teachers and college, and satisfaction with progress and goals. Subjects in the study included 253 students in the course who took the pre-test; and 88 who took both pre- and post-tests.

The student taking the test sorted cards into seven piles, pile number one being the most descriptive of him and pile number seven being the least descriptive, with most of the items between these two extremes. The distribution of cards among the piles was prearranged so that the items formed a normal distribution, and constituted the student's profile. The profile was scored by correlating it with the "ideal" profile which was constructed by counselors. The students took the test on the first day of the course, half taking Form A and half Form B. The post-test was taken on the next-to-last day, with each students taking the form opposite the one he had taken originally.

The following results were obtained: The correlations were transformed to Fisher's Z-scores so that they could be averaged. A "highly significant" change in the mean value of the scores occurred during the course, with the average student profile on the post-test more nearly like the "ideal" than on the pre-test. As a control, a group of students not in the course were divided into "old" (1 to 4 previous semesters at college) and "new" (first semester of college work). Average pre-test scores for the "new" and "old" students were essentially the same suggesting that previous college exposure had no effect on improving study habits and attitudes.

Creaser pointed out that grades are a narrow criterion by which to measure the success of a study-habits course, and one of these criteria should be some measurement of the student's satisfaction with the adjustment he has made to studying and college life.

Di Lorenzo (9) conducted an investigation to determine whether some variable might be indicative of the degree of improvement to be made from taking a "how to study" course. The following procedure was employed in his investigation: In December, 1959, the Study-Habits Inventory was administered to 724 students in the School of Education, St. John's University. The inventory was accompanied by a request to volunteer for the study-habits program. The 258 subjects involved were full-time female students enrolled in the 1959-60 school year.

One experimental and two control groups were formed by pairing each student in the course with two students who were not. The students in one control group had volunteered and were not accepted, while those in the second control group were unwilling to take the instruction. The subjects were paired on past QPI (quality point index), sex, year in college, total score on the SCAT and SHI scores. The course was offered one hour a week for thirteen weeks. A lecture and discussion approach was employed with emphasis on application. At completion of the course, the semester averages in terms of QPI were computed. These were compared to the previous cummulative QPI's. Changes of the experimental students were compared to those of the control students.

Di Lorenzo concluded that

1. Differences in QPI gain were significant for the experimental group over the volunteer control group and just short of significant over the non-volunteer control group. The benefit of instruction for non-probationary students was clearly demonstrated.

2. The relative difference in improvement of the experimental group over the two control groups was not significant. The volunteer control S's recognized a need and desire to improve their study habits, but did not do so on their own.

3. QPI gains favored the experimental students at each grade level, but only the juniors taking the course made a significant improvement over their controls.

4. The correlation between the QPI gain difference (QPI_D) and the SCAT scores was not significant.

5. The correlation coefficient between the QPI_D and SHI scores was significant at the .01 level; the lower the study habits rating, the greater the improvement by the trained S's over the control S's.

Ofman (31) conducted a series of informal seminars for students on probationary status at UCLA. Enrollment was voluntary and the discussion was unstructured. Topics discussed by the students included goals, efficiency, anxiety, independence, failure, rejection, hostility, and study skills. The author observed that students experiencing the seminar felt better equipped to deal with present and future educational situations.

Jackson (15) conducted a student-centered group counseling program at the University of Illinois. Objectives included assessing the role of ability, adjustment, and poor study materials in overall student effectiveness. Students who sought help were divided into homogeneous discussion groups according to low ability-low achievement and average or high ability-low achievement. Individual counseling was also used in conjunction with group activities. Significant increases in grades, reading speed, and comprehension were noted. Decreases were also recorded on the depression and hysteria scales of the M.M.P.I.

Snow (43) found that a study skills course consisting of formal instruction and individual counseling resulted in significant increases in grade point averages for University of Wyoming students. Ninety-five percent of the students felt that the course was valuable. Students also showed significant increases in reading efficiency.

In investigation of a study method course, Tresselt and Richlem (47) investigated the relationship of the nature and severity of referral students' problems to three levels of study skills instruction.

Grades of the students before, during and after taking the course were used as the criterion. Lectures, group counseling, and individual counseling constituted the course. It was found that students with mild adjustment problems could be helped by counseling, that students with satisfactory ability and a study methods problem could be helped by course content, but that students with severe adjustment problems required outside help.

In an additional study, Richlem and Tresselt (34) reported that the correlation between ability and grades after the course was significant, whereas it was not prior to the course.

Sharp (39) attempted to reduce the number of potentially good students who fail in colleges and universities through a seven-hour voluntary, non-credit study skills course. Discussion was centered on study habits and included scheduling, note-taking, and concentration. Pronounced improvements in grade point average over a control group who knew about the course but did not enroll was noted for the current quarter and subsequent quarters.

Di Michael (10) conducted a study to assess the relationship of transfer effects of a study skills course to specific academic courses by intelligence level among ninth graders. It was found that participation in the year-long study skills course (two 45-minute classes per week) was associated with a significant gain in history achievement for students of superior ability, but not in other courses or for students at other intelligence levels.

In a research project combining study skills discussions with actual supervised study, Winter (51) found that overall scholastic performance was significantly higher during the experimental term but was not lasting. His subjects included students scoring in below the 20th percentile on the American Council on Education Psychological Examination.

When probationary students at Ohio State University attended a non-credit intensive study skills course, Behrens (2) found significant improvement on performance. Study skills students demonstrated greater tenure in school after the course, had higher grades, and kept receiving high grades after the course than a matched control group. Attention was given in the course to health, social, and emotional factors as well as study methods.

The foregoing reviews and evaluative reports are illustrative of research on the effectiveness of study skills courses. In addition to such studies as were cited, the research literature is repleat with attempts to explain variation in achievement with the use of study skills and attitude inventories. Such studies have been abstracted in other volumes such as that prepared by Neidt (26) and will not be reviewed here. Because one inventory, the Survey of Study Habits and Attitudes by Brown and Holtzman (5) was involved in the present study, however, the work on which it was based and evidence of its validity and reliability are reviewed in the following paragraphs.

In 1941 Brown (4) contrasted 211 sophomore probationary students at the University of California and 120 elementary psychology students in terms of their study habits. Using "psychologically correct" responses to reading and study skills items, he found relatively few significant differences. Successful and unsuccessful students failed to use many efficient techniques.

In 1954, Holtzman, Brown and Farquhar (14) reported item analysis data and evidence of reliability and validity of the Survey of Study Habits and Attitudes. The sample used for the final item analysis consisted of 358 women and 328 men, all second-semester freshmen in four Texas colleges. One-semester GPA's served as the criterion. Using the upper and lower 27% of each grade distribution, phi coefficients were computed independently for each of the five possible choices on every item. Selection of items to be keyed was based on a modification of Dailey's suggested guide for keying by patterns of responses.

The final key for men contained 36 items; for women, 29 items. Twenty-two items were common to both. A value of 2 was assigned to the category at the end of the response-continuum which characterized the superior students, a weight of one was given the next adjacent category, and the remaining three received a 0 weight.

The SSHA was administered to 1756 men and 1118 women in 10 colleges for cross-validation. Validity coefficients for men vary from .27 to .66 with an average of .42; for women they vary from .26 to .65 with an average of .45. All correlations between SSHA scores and grades were significant at the .01 level.

Correlations between the SSHA and the ACE Psychological Examination were low. Since the ACE is highly saturated with known scholastic aptitude factors, it may be concluded that the SSHA measures important traits which are relatively untouched by the standard college entrance examination. It makes a unique contribution in predicting academic success.

Reliability of the SSHA was estimated by
(1) the split-thirds method and
(2) the test-retest method.

The split-thirds method yielded reliabilities significant at the .01 level for men and the .05 level for women. Two studies using the test-retest method yielded reliabilities of .95 and .88 for men and .93 and .84 for women.

Reading Ease Scores were 67 for the cover page (understood by average 8th or 9th graders) and 58 for the items (understandable by average 10th graders).

From further studies it was concluded that the scoring keys as finally adopted represented the best ones available from the point of view of both scoring ease and validity.

Further results suggested that the SSHA has a validity higher than that reported above when used for guidance of students who are seeking help with their academic difficulties; that is, when they have shown an interest in their SSHA scores.

Literature Review Summary: Whereas many evaluations of study skills courses using conventional instruction techniques have been made, no attempt has been made to assess the desirability of using videotaped instruction for teaching study skills courses. In general, reports of the evaluations of study skills courses support the offering of such courses. Students reportedly show gains of one half letter grade in their overall averages following the completion of study skills courses. Students also show more favorable attitudes toward education and attitudes toward study after completing a study skills course.

Objectives: The present study was designed to answer the following questions:

1. What is the reaction of students to a videotaped study-skills course?

2. Will a videotaped study-skills course meet the needs of students in a rapidly growing university?

3. What are the characteristics of students who profit most from experiencing a videotaped study-skills course?

4. How should outside assignments be handled in a videotaped study-skills course?

5. At what time of day can best results be obtained from televising a study-skills course?

6. What factors (such as credit) contribute toward the motivation of students enrolled in a television study-skills course?

Hypotheses: Major hypotheses tested in the present study were:

1. A videotaped study-skills course will result in significant changes in score on a study skills inventory.

2. Overall grade point averages of students enrolled in a videotaped study skills course will improve significantly after the course.

3. Freshmen will record greater gains in inventory scores and grade point averages after enrolling in a study skills course than other students.

4. There will be no significant criterion differences among times of the day for offering a non-credit videotaped study skills course.

METHOD

The present study was conducted in two phases. During the first phase the videotapes were produced and the evaluative instruments were chosen or developed. During the second phase the videotaped study skills course was shown according to several experimental conditions and evidence of its effectiveness was obtained and analyzed.

Development of the Videotapes: Ten 30-minute videotaped lectures were produced for the present study. Each of these was preceded by moving picture film footage designed to illustrate the topic to be covered in the lecture concerned. Such footage included commencement exercises scenes of study situations in dormitories, sorority and fraternity houses, and laboratory experiments involving learning.

Titles for the ten tapes were as follows:

1. Setting Your Sights
2. Scheduling Your Time
3. Study Environment
4. Learning and Reinforcement
5. Learning: An Active Process
6. How to Take Notes in Class and on Your Readings
7. How to Read a Textbook
8. Efficiency in Study
9. How to Take Exams
10. Where and When to Seek Counsel

Selection and Construction of Evaluation Instruments: A study skills inventory, an attitude scale, two knowledge examinations, and a structured set of interview questions constituted the evaluative instruments employed in the present study.

Brown-Holtzman Survey of Study Habits and Attitudes: After a thorough review of available study skills inventories, the Survey of Study Habits and Attitudes (5) was chosen for use in the present study. In general, this instrument was selected because it paralleled the content of the course, had been shown to possess satisfactory validity and reliability, was feasible to use, and was accompanied by useable norms.

Attitude Toward the Course Scale: To asses the specific attitudes of students toward the methods of instruction and the course content, a special 18-item scale was developed. This scale was of the Likert type and contained items found to be discriminating in an earlier study by Neidt (27). A copy of the scale is shown in the Appendix.

To assess the reliability of the attitude scale, three samples of thirty students were drawn at random from the experimental groups and their split half scores obtained. Reliability under each condition was estimated as follows:

Samples	N	Odd-Even r	Spearman-Brown r
Fall	30	.826	.905
Winter	30	.833	.909
Spring	30	.772	.871

On the basis of these results, the attitude scale was judged to have satisfactory reliability for group comparisons.

Knowledge Examinations: Two multiple-choice knowledge tests were constructed to cover the specific content of the videotape lectures. Each test contained 25 items and each was based upon specific presentations. Knowledge Test One covered the first five videotapes and Knowledge Test Two covered videotapes six through nine. The content of tape ten was not examined since all available time during the last session was to be used for the administration of the Survey of Study Habits and Attitudes.

Reliability estimates based on samples of 30 students for the two knowledge tests were as follows:

Samples	N	1st Knowledge		2nd Knowledge	
		r_{Oe}	S-Br	r_{Oe}	S-Br
Fall	30	.506	..672	.521	.677
Winter	30	.297	.458	.346	.514
Spring	30	.412	.584	.483	.651

A copy of each knowledge examination is shown in the Appendix.

Interview Questions: To assess student reaction to the course in individual situations and to obtain suggestions for improving the course, a series of eleven questions were developed. These questions were patterned after those used in an earlier study by Neidt and French (29). The interview questions used in the present study were as follows:

1. After having had a course on study skills, how do you feel about this type of course?
2. What did you like best about the course?
3. What was the worst part of the course?
4. How do you think this course would compare with taking the same course with a conventional lecture system?

5. Do you feel any different about your study habits now than you did before you started this course?
6. How do you think this study skills course could be improved?
7. Would you have any criticisms or comments concerning the instruction of this course by Dr. Vattano?
8. How did you feel about taking the exams and attitude scales?
9. How would you suggest we get students interested in taking this course?
10. Do you think this course has or will improve your study habits?
11. Do you have any additional comments?

Presentations of the Course: The videotaped study skills course was offered to nine groups in the present study. The offerings were as follows:

1965 - 66 Academic Year

Condition	Number Enrolled	Male	Female	F	S	Jr	Sr
Fall Quarter - Noon twice weekly	108	71	37	35	50	14	7
Fall Quarter - 4:00 p.m. twice weekly	50	27	23	15	23	9	3
Winter Quarter - Noon daily	89	56	33	39	28	12	6
Winter Quarter - 4:00 p.m. daily	98	62	36	43	23	16	7
Winter Quarter - 7:00 p.m. twice weekly	33	19	14	18	9	4	[illegible]
Spring Quarter - 7:00 p.m. twice weekly	41	31	10	15	9	9	[illegible]
Spring Quarter - 7:00 p.m. twice weekly (football)	23	23	-	14	5	2	-
Spring Quarter - 7:00 p.m. twice weekly (high school)	101	41	60				

1966 - 67 Academic Year

Condition	Number Enrolled	Male	Female	F	S	Jr	Sr
Fall Quarter - 4:00 p.m. twice weekly	209	86	123	105	68	31	4

Three kinds of conditions were involved in the experimentation: time of day, frequency of offerings per week, and type of student involved. During the fall quarter, 1965-66, the course was offered twice weekly (Tuesday and Thursday) at noon and at 4:00 p.m. During the winter quarter the course was offered at noon and at 4:00 p.m. on a daily basis (five days per week for two weeks) and at night (7:00 p.m.) twice a week for five weeks. During the spring quarter the course was offered at 7:00 p.m. twice a week for five weeks to three receiving groups - one volunteer group of university students, twenty-three football players who were required to enroll for the course, and to 101 high school students who voluntarily enrolled. During the fall quarter 1966-67, the course was offered at 4:00 p.m. twice a week for five weeks.

The experimental period for the course was to have been the 1965-66 academic year according to original plans. The course proved to be so popular that an additional offering during the 1966-67 fall quarter was made. Because the 1965-66 data were already being analyzed by the start of the 1966-67 academic year, the 1966-67 fall quarter data were analyzed separately. Thus, two analyses were made, one for the 1965-66 academic year and one for the 1966-67 academic year.

In all university instances except the offering involving the football players, students enrolled for the course by signing a roster in a central campus location. Publicity for the course included newspaper coverage, radio announcements, letters to the leaders or organized houses and dormitories, and a memorandum describing the course sent to all student advisers. High school students enrolled for the course through their counselor following a bulletin board announcement.

Administration of the evaluation instruments followed the same pattern regardless of the group or the condition involved. The basic pattern was:

First Session	-	Survey of Study Habits and Attitudes
Second Session	-	Attitudes Scale
Fifth Session	-	First Knowledge Examination
Ninth Session	-	Second Knowledge Examination and Attitude Scale
Tenth Session	-	Survey of Study Habits and Attitudes
Post Course	-	Interview Questions

Attendance was checked at every class session. Grade point averages for the previous quarter and the current quarter were obtained at the end of the quarter in which the course was offered. Grade point averages for the following quarter and for the second quarter after the course were obtained for the students enrolled in the course during the fall quarter. Upon the completion of each course, certificates were issued to all students who had attended eight or more class sessions.

Analyses: All data were coded and punched for electronic data processing. In general, the following analyses were made:

> Intercorrelation of all measures by subgroup
>
> Paired data t-test: Survey of Study Habits and Attitudes; Changes in grade point average, Change in attitude toward the course.
>
> Analysis of variance: Knowledge tests, Grade point average, Attitude scores, and Times attended
>
> Analysis of covariance: Survey of Study Habits and Attitudes and grade point average.

Interview responses were analyzed according to the frequency with which specific responses were given.

RESULTS

Criterion measures in the present study included both intellective and nonintellective variables. Some measures of the criterion variable were obtained longitudinally whereas other were obtained cross sectionally. Subjects in the study were classified according to several independent variables, i.e. sex, class level (freshman, sophomore, junior, and senior) and achievement level prior to the course (below 2.0 grade point average, 2.0 to 2.49, and 2.5 or higher) and condition (quarter and time of day the course was offered).

The results of the study are presented according to the following scheme:

- Longitudinal Comparisons
    - Nonintellective Criteria
        - Survey of Study Habits and Attitudes
        - Attitude Toward the Course
    - Intellective Criteria
        - Grade Point Average
- Cross Sectional Comparisons
    - Nonintellective Criteria
        - Attitude Toward the Course
        - Attendance
    - Intellective Criteria
        - Knowledge Examinations
- Analyses of Covariance
- Intercorrelational Analyses
- Comments
- Supplementary Data

Longitudinal Comparisons: The Survey of Study Habits and Attitudes and the Attitude Toward the Course scale were administered twice during the experimental period. Cumulative grade point averages and the grade point averages for the quarter in which the course was taken were obtained for all university students in the study. In addition, grade point averages for the next quarter following the course were obtained for the fall and winter quarter students and for the second next quarter after the course for the fall quarter students. On the basis of these data, it was possible to obtain a partial answer to the question, "Did the students change?"

In Table 1 are shown means, standard deviations and t-values for the Survey of Study Habits and Attitudes scores by sex, class level, achievement level and condition. In this and subsequent tables in the report, a single asterisk denotes significance at the .05 level and a double asterisk denotes significance at the .01 level.

Inspection of Table 1 indicates that the total group, both sexes, all achievement levels, three class levels, and five condition categories changed to a highly significant degree during the course. The 7:00 p.m. spring condition category changed significantly. Seniors, football players, and high school students did not change significantly. It should also be noted that all groups moved toward more desirable study habits and attitudes. Evidence from Table 1 supports the conclusion that when scores on a study skills inventory are used as a criterion, videotaped study skills lectures result in significant improvement.

In Table 2 are shown the changes in attitude toward the course scores by sex, class level, achievement level, and condition. From Table 2 it can be seen that "progressive disenchantment" was reflected to a highly significant degree for the entire group and for the sophomore group. Significant decline in attitude toward the course was reflected for each sex group, for the 2.00 to 2.50 achievement group, and for the Fall 4:00 and Winter 12:00 conditions. All groups except one (Spring 7:00 p.m.) showed a decrease in favorability of attitude. These findings are in accord with those of previous research (27). The decreases in favorability reported for the present study are, however, considerably less than those noted for most courses previously studied.

In Table 3 is shown an overview of the changes in grade point average recorded for the students in the present study. Number of cases in Table 3 are based on cross sectional tabulations rather than longitudinal. Thus, 216 males had a previous grade point average but 278 had a current quarter average. This means that at least 68 students in the group were enrolled for their initial quarter when they took the study skills course and therefor had not established a previous cumulative grade point average.

From Table 3 it can be seen that most groups raised their grade point averages throughout the experimental year. Students whose cumulative average prior to the course was above 2.50, however, did not.

Table 1

LONGITUDINAL COMPARISONS OF EVALUATION DATA SURVEY OF STUDY HABITS AND ATTITUDES SCORES

Classification	N	1st Admin.		2nd Admin.		
		Mean	Std. Dev.	Mean	Std. Dev.	t
Sex						
Male	191	28.50	10.96	32.53	12.09	7.989**
Female	134	28.33	8.95	31.70	10.02	5.739**
Class Level						
Freshman	120	27.18	9.13	31.14	11.02	6.025**
Sophomore	95	27.57	9.62	32.40	9.64	6.609**
Junior	47	30.55	12.44	33.68	13.37	3.459**
Senior	13	28.00	11.79	30.92	12.38	2.13
Achievement Level						
Below 2.00	110	26.54	9.43	30.38	10.06	5.202**
2.00 to 2.50	72	27.14	10.10	31.54	11.11	6,806**
Above 2.50	53	33.32	9.44	36.91	10.86	4.285**
Condition						
Fall 12:00	57	29.51	10.70	33.58	10.50	3.917**
4:00	31	27.23	9.32	30.74	10.43	3.291**
Winter 12:00	72	26.40	8.70	30.67	10.99	5.256**
4:00	74	29.22	10.22	33.59	12.18	5.334**
7:00	19	26.63	10.30	31.63	9.35	2.997**
Spring 7:00	19	31.05	13.78	34.05	15.12	2.239*
Football	12	25.08	10.02	28.33	8.40	1.637
High School	41	30.56	10.08	32.00	11.34	1.497
Total	325	28.43	10.17	32.19	11.28	9.822**

Table 2

LONGITUDINAL COMPARISON OF EVALUATION DATA
ATTITUDE SCALE SCORES

Classification	N	1st Admin.		2nd Admin.		t
		Mean	Std. Dev.	Mean	Std. Dev.	
Sex						
Male	184	58.60	7.73	57.16	6.98	2.438*
Female	126	60.67	6.53	59.79	7.58	1.412*
Class Level						
Freshman	107	59.85	6.84	59.47	7.00	.608
Sophomore	103	59.53	5.61	57.86	6.61	2.719**
Junior	37	57.22	11.40	56.89	8.46	.154
Senior	14	54.79	3.85	53.86	5.64	.51
Achievement Level						
Below 2.00	87	58.45	7.97	57.72	8.16	.831
2.00 to 2.50	64	59.72	7.05	57.80	7.28	2.433*
Above 2.50	57	59.82	4.95	58.02	6.67	1.901
Condition						
Fall 12:00	75	58.63	7.43	57.81	6.63	.778
4:00	37	59.32	5.53	57.14	6.85	2.297*
Winter 12:00	62	60.08	5.47	58.35	6.81	2.124*
4:00	52	59.96	6.98	58.83	7.88	1.205
7:00	20	59.80	6.98	58.83	6.26	1.243
Spring 7:00	12	57.08	13.11	60.08	5.42	.796
Football	10	53.60	11.35	48.40	7.72	1.405
High School	43	61.09	7.73	59.56	8.16	1.520
Total Sample	310	59.44	7.26	58.23	7.33	2.805**

Table 3

COMPARISONS OF EVALUATION DATA
GRADE POINT AVERAGES

Classification	N	Previous Cum. Ave.	N	Current Qtr. Ave.	N	Next Qtr. Ave.	N	2nd Next Qtr. Ave.
Sex								
Male	216	2.07	278	2.22	212	2.32	79	2.49
Female	131	2.18	151	2.36	139	2.40	57	2.79
Class Level								
Freshman	135	1.95	186	2.14	146	2.17	45	2.55
Sophomore	130	2.21	149	2.39	131	2.50	65	2.65
Junior	59	2.15	66	2.36	53	2.34	19	2.58
Senior	24	2.26	26	2.33	21	2.68	8	2.41
Achievement Level								
Below 2.00	156	1.61	155	1.98	113	2.08	20	2.47
2.00 to 2.50	102	2.18	106	2.30	90	2.33	25	2.54
Above 2.50	89	2.87	89	2.75	75	2.72	30	2.83
Condition								
Fall 12:00	58	2.45	106	2.30	99	2.43	91	2.66
4:00	25	2.24	50	2.43	48	2.60	45	2.53
Winter 12:00	86	2.10	88	2.36	81	2.35		
4:00	92	1.99	93	2.19	91	2.23		
7:00	30	2.13	33	2.09	32	2.04		
Spring 7:00	37	2.04	38	2.26				
Football	21	1.63	23	2.06				
Total Sample	350	2.10	432	2.27	352	2.35	137	2.59

In Tables 4, 5, and 6 are shown tests of significance between cumulative averages prior to the course and the grade point average obtained during the quarter the course was taken, the next quarter and the second next quarter. Data in these three tables are longitudinal.

Inspection of Tables 4, 5, and 6 reveals that the total group, both males and females, sophomores, and students with initial averages below 2.00 gained consistently to a significant or highly significant degree. Comparisons in Table 6 are based on relatively few cases, however.

Results from the grade point analyses support the conclusion that students enrolled in a videotaped study skills course increase their grade point average to a significant degree both immediately and in subsequent quarters.

Cross Sectional Comparisons: To determine the extent to which differences existed among subgroups on the first and second attitude toward the course scales, the first and second knowledge test scores and number of times attended, the cross sectional comparisons in Tables 7 and 8 were made. The data in these tables reveal that females were more favorable than males to a highly significant degree on both attitude scale administrations. Whereas freshmen and sophomores were significantly more favorable on the first administration, there were no significant differences among class levels on the second administration.

Whereas differences among achievement levels were highly significant for the first knowledge examination (Table 9), these differences did not exist on the second knowledge examination. It should be noted that the first and second knowledge examinations are different instruments. Males scores significantly higher than females on the second knowledge test.

No significant differences in attendance were reflected among the subgroups as shown in Table 11. This finding suggests that videotaped lectures on study skills have relatively uniform appeal to such groups as those involved in the present study.

In general, it can be concluded from the cross sectional comparisons that females tend to be more favorable than males toward a videotaped study skills course, but that sex, class level, achievement level, and condition have little or no relation to specific information learned in the course or to attendance during the course.

Table 4

LONGITUDINAL COMPARISONS OF EVALUATION DATA PREVIOUS GPA AND PRESENT GPA

Classification	N	Previous GPA		Present GPA		t
		Mean	Std. Dev.	Mean	Std. Dev.	
Sex						
Male	214	2.06	.59	2.24	.72	3.669**
Female	130	2.18	.71	2.34	.73	2.567**
Class Level						
Freshman	135	1.95	.75	2.14	.70	2.767**
Sophomore	129	2.21	.62	2.41	.73	3.209**
Junior	58	2.14	.44	2.27	.68	1.589
Senior	24	2.26	.39	2.36	.68	.670
Achievement Level						
Below 2.00	155	1.61	.35	1.98	.66	6.664**
2.00 to 2.50	102	2.18	.49	2.32	.66	1.787
Above 2.50	88	2.87	.35	2.75	.63	1.751
Condition						
Fall 12:00	58	2.45	.50	2.41	.74	.412
4:00	25	2.24	.52	2.37	.66	1.139
Winter 12:00	85	2.10	.59	2.35	.72	3.606**
4:00	90	1.99	.70	2.20	.76	2.447*
7:00	30	2.13	.75	2.14	.65	.065
Spring 7:00	37	2.04	.66	2.26	.74	2.719**
Football	21	1.63	.31	2.08	.62	2.700**
Quarter						
Fall	83	2.39	.51	2.40	.71	.180
Winter	205	2.05	.66	2.25	.73	3.779**
Total	344	2.11	.64	2.28	.72	4.479**

Table 5

LONGITUDINAL COMPARISON OF EVALUATION DATA
PREVIOUS GPA AND NEXT QUARTER GPA

Classification	N	Previous GPA		Next GPA		t
		Mean	Std. Dev.	Mean	Std. Dev.	
Sex						
Male	157	2.12	.58	2.33	.78	3.172**
Female	118	2.19	.72	2.35	.72	2.228*
Class Level						
Freshman	98	2.01	.82	2.11	.68	1.085
Sophomore	113	2.24	.61	2.50	.73	3.849**
Junior	46	2.17	.38	2.27	.85	.862
Senior	19	2.23	.33	2.72	.69	3.630**
Achievement Level						
Below 2.00	113	1.63	.37	2.07	.73	6.176**
2.00 to 2.50	87	2.18	.53	2.36	.69	2.016*
Above 2.50	74	2.88	.34	2.72	.71	2.013*
Condition						
Fall 12:00	55	2.45	.50	2.55	.60	1.198
4:00	25	2.24	.52	2.47	.86	1.693
Winter 12:00	78	2.10	.60	2.34	.72	3.015**
4:00	89	2.00	.70	2.25	.79	2.664**
7:00	28	2.13	.76	2.07	.84	.301
Quarter						
Fall	80	2.39	.52	2.52	.69	1.987
Winter	195	2.06	.67	2.26	.77	3.346**
Total	275	2.15	.65	2.34	.75	3.873**

Table 6

LONGITUDINAL COMPARISONS OF EVALUATION DATA PREVIOUS GPA AND SECOND NEXT QUARTER GPA

Classification	N	Previous GPA		2nd Next GPA		t
		Mean	Std. Dev.	Mean	Std. Dev.	
Sex						
Male	34	2.32	.46	2.61	.53	2.491*
Female	40	2.46	.52	2.72	.64	2.467*
Class Level						
Freshman	3	2.29	1.90	2.34	1.98	.344
Sophomore	51	2.42	.51	2.72	.56	3.231**
Junior	15	2.29	.36	2.46	.68	.800
Senior	6	2.16	.31	2.56	.51	1.950
Achievement Level						
Below 2.00	20	1.78	.40	2.47	.81	4.540**
2.00 to 2.50	25	2.22	.16	2.54	.51	3.279**
Above 2.50	30	2.89	.36	2.83	.64	.522
Condition						
Fall 12:00	51	2.47	.49	2.75	.57	3.034**
4:00	23	2.23	.49	2.49	.60	1.772
Total	74	2.40	.50	2.67	.59	3.527

Table 7

CROSS SECTIONAL COMPARISONS OF EVALUATION DATA
FIRST ATTITUDE SCALE SCORES

Classification	N	Mean	Standard Deviation
Sex	F=5.256*	Significant .05	
Male	275	58.32	8.15
Female	181	60.06	7.56
Class Level	F=2.258*	Significant .05	
Freshman	152	59.00	8.05
Sophomore	129	59.43	6.98
Junior	55	57.26	10.35
Senior	23	55.52	5.86
Achievement Level	F=1.904	Nonsignificant	
Below 2.00	129	57.63	9.14
2.00 to 2.50	86	59.12	8.09
Above 2.50	78	59.76	5.95
Condition	F=1.421	Nonsignificant	
Fall 12:00	92	58.84	7.17
4:00	50	59.93	5.59
Winter 12:00	82	59.83	6.19
4:00	74	58.74	9.79
7:00	30	60.00	5.77
Spring 7:00	42	56.06	9.64
Football	16	52.25	12.04
High School	88	60.10	7.91
Total Sample	458	58.49	7.95

Table 8

CROSS SECTIONAL COMPARISONS OF EVALUATION DATA
SECOND ATTITUDE SCALE SCORES

Classification	N	Mean	Standard Deviation
Sex	F=12.042**	Significant .01	
Male	217	57.33	7.11
Female	148	60.02	7.53
Class Level	F=1.949	Nonsignificant	
Freshman	132	58.45	8.79
Sophomore	115	58.02	6.63
Junior	47	57.62	8.26
Senior	16	54.13	5.74
Achievement Level	F=.152	Nonsignificant	
Below 2.00	109	57.38	9.56
2.00 to 2.50	74	57.81	7.09
Above 2.50	64	58.06	7.06
Condition	F=1.68	Nonsignificant	
Fall 12:00	88	58.34	6.74
4:00	43	56.74	7.41
Winter 12:00	82	59.83	6.19
4:00	63	59.32	7.76
7:00	23	61.17	6.20
Spring 7:00	17	59.29	5.32
Football	14	48.50	7.59
High School	50	59.68	7.91
Total Sample	368	58.27	7.91

Table 9

CROSS SECTIONAL COMPARISONS OF EVALUATION DATA
FIRST KNOWLEDGE EXAMINATION SCORES

Classification	N	Mean	Standard Deviation
Sex	F=0.00	Nonsignificant	
Male	263	20.11	2.21
Female	168	20.14	2.20
Class Level	F=1.412	Nonsignificant	
Freshman	147	20.10	2.61
Sophomore	121	20.27	1.81
Junior	56	20.75	2.10
Senior	19	19.79	2.23
Achievement Level	F=5.712	Significant .01	
Below 2.00	122	19.86	2.47
2.00 to 2.50	90	20.13	2.38
Above 2.50	68	21.02	1.75
Condition	F=1.610	Nonsignificant	
Fall 12:00	81	20.63	1.83
4:00	43	20.38	1.78
Winter 12:00	73	20.51	1.77
4:00	83	19.81	2.22
7:00	22	20.23	2.56
Spring 7:00	29	20.17	2.35
Football	19	19.95	3.01
High School	46	19.26	2.66
Total Sample	435	20.05	2.37

Table 10

CROSS SECTIONAL COMPARISONS OF EVALUATION DATA
SECOND KNOWLEDGE EXAMINATION SCORES

Classification	N	Mean	Standard Deviation
Sex	F=5.919*	Significant at .05	
Male	174	15.15	2.42
Female	108	14.41	2.58
Class Level	F=0.050	Nonsignificant	
Freshman	98	15.25	2.64
Sophomore	87	15.12	2.23
Junior	35	15.17	2.51
Senior	9	15.00	1.94
Achievement Level	F=.705	Nonsignificant	
Below 2.00	85	14.97	2.63
2.00 to 2.50	55	15.18	2.42
Above 2.50	40	15.53	2.22
Condition	F=.490	Nonsignificant	
Fall 12:00	61	15.13	2.07
4:00	37	14.84	2.38
Winter 12:00	58	15.40	2.94
4:00	44	15.11	2.15
7:00	6	15.83	3.97
Spring 7:00	17	15.59	2.00
Football	14	16.29	2.34
High School	46	12.87	2.79
Total Sample	284	14.83	2.63

Table 11

CROSS SECTIONAL COMPARISONS OF EVALUATION DATA
TIMES ATTENDED

Classification	N	Mean	Standard Deviation
Sex			
Male	308	7.54	2.27
Female	213	7.67	2.01
Class Level			
Freshman	172	7.84	2.10
Sophomore	145	7.97	1.96
Junior	66	7.83	3.63
Senior	26	7.12	2.50
Achievement Level			
Below 1.50	138	8.11	3.78
2.00 to 2.50	103	7.86	2.10
Above 2.50	90	7.49	2.30
Condition			
Fall 12:00	107	7.61	2.43
4:00	50	8.28	1.64
Winter 12:00	90	8.30	2.00
4:00	98	7.74	2.06
7:00	34	6.68	2.40
Spring 7:00	42	6.98	2.24
High School 7:00	102	7.00	1.96
Total Sample	524	7.66	2.62

All differences nonsignificant

Analyses of Covariance: Since previous comparisons among subgroups were made without regard to initial measure on repeated measurements, and since the cross sectional comparisons indicated some differences, analyses of variance were computed for the Survey of Study Habits and Attitudes scores and for the grade point average comparisons. The analysis of covariance summaries are shown in Tables 12 through 15.

Inspection of Table 12 indicates that when adjustment in the criterion mean is made to compensate for individual differences in initial score, the only significant differences among gains in Survey of Study Habits and Attitude scores is within the achievement level subgroups. Here it can be seen that students with grade point averages below 2.00 and those with averages from 2.00 to 2.50 gained highly significantly more than students with averages above 2.50.

From Table 13 it can be seen that freshmen and students with averages below 1.50 gained immediately to a significant degree, but that sophomores and seniors were significantly high by the end of the next quarter. This suggests that study habits of freshmen are more easily changed than those of upperclassmen.

No significant differences among the subgroups are shown in Table 15. This is partially a function of the small numbers of cases involved in the various subgroups.

Summary of Quantitative Comparisons: Almost all of the subgroups of students in the present study recorded significant gains in study habits inventory scores and grade point averages. Few differences were noted in knowledge examinations for the subgroups. Decrease in favorability toward the course was noted as the course progressed in most groups. In general, however, the evidence supports the conclusion that the videotaped instruction is an effective method for presenting a study skills course.

Table 12

ANALYSIS OF COVARIANCE SUMMARY-SECOND SURVEY OF STUDY HABITS AND ATTITUDES WITH FIRST SURVEY SCORE CONSTANT

Classification	N	First Mean	Adjusted Y Mean	Df	F
Sex				1,325	.423
Male	191	28.49	32.46		
Female	134	28.32	31.78		
Class Level				3,271	.683
Freshman	120	27.17	31.79		
Sophomore	95	27.56	32.71		
Junior	47	30.55	31.39		
Senior	13	28.00	30.85		
Achievement Level				2,232	7.016**
Below 2.00	110	26.53	31.84		
2.00 to 2.50	72	27.13	32.49		
Above 2.50	53	33.32	32.57		
Condition				5,266	.846
Fall 12:00	57	29.50	32.45		
4:00	31	27.22	31.65		
Winter 12:00	72	26.40	32.31		
4:00	74	29.21	32.73		
7:00	19	26.63	33.07		
Spring 7:00	19	31.05	31.55		

Table 13

ANALYSIS OF COVARIANCE SUMMARY-PRESENT GPA WITH PREVIOUS GPA HELD CONSTANT

Classification	N	First Mean	Adjusted Y Mean	Df	F
Sex				1,342	1.423
Male	214	2.06	2.27		
Female	130	2.18	2.30		
Class Level				3,342	3.118*
Freshman	135	1.95	2.21		
Sophomore	129	2.21	2.35		
Junior	58	2.14	2.26		
Senior	24	2.26	2.28		
Achievement Level				2,342	39.512**
Below 2.00	155	1.61	2.11		
2.00 to 2.50	102	2.18	2.30		
Above 2.50	88	2.87	2.55		
Condition				5,319	1.075
Fall 12:00	58	2.45	2.25		
4:00	25	2.24	2.32		
Winter 12:00	85	2.10	2.37		
4:00	90	1.99	2.28		
7:00	30	2.13	2.15		
Spring 7:00	37	2.04	2.31		

Table 14

ANALYSIS OF COVARIANCE SUMMARY-NEXT QUARTER GPA WITH PREVIOUS GPA HELD CONSTANT

Classification	N	First Mean	Adjusted Y Mean	Df	F
Sex				1,273	.053
Male	157	2.12	2.34		
Female	118	2.19	2.33		
Class Level				3,272	6.906**
Freshman	98	2.01	2.38		
Sophomore	113	2.24	2.69		
Junior	46	2.17	2.50		
Senior	19	2.23	2.67		
Achievement Level				2,271	18.098**
Below 2.00	113	1.63	2.21		
2.00 to 2.50	87	2.18	2.35		
Above 2.50	74	2.88	2.52		
Condition				5,269	1.946
Fall 12:00	55	2.45	2.42		
Fall 4:00	25	2.24	2.43		
Winter 12:00	78	2.10	2.36		
Winter 4:00	89	2.00	2.32		
Winter 7:00	28	2.13	2.08		

Table 15

ANALYSIS OF COVARIANCE SUMMARY-SECOND NEXT GPA WITH PREVIOUS GPA HELD CONSTANT

Classification	N	First Mean	Adjusted Y Mean	Df	F
Sex				1,72	.686
Male	34	2.32	2.63		
Female	40	2.46	2.70		
Class Level				3,71	.818
Freshman	3	2.29	2.38		
Sophomore	5	2.42	2.69		
Junior	15	2.29	2.50		
Senior	6	2.16	2.67		
Achievement Level				2,72	2.286
Below 2.00	20	1.78	2.95		
2.00 to 2.50	25	2.22	2.66		
Above 2.50	30	2.89	2.40		
Condition				5,68	.628
Fall 12:00	51	2.47	2.73		
4:00	23	2.23	2.53		

Correlational Analyses: To obtain evidence of the degree and direction of relationships among the variables observed in the present study, a complete correlation matrix was computed for the total sample and for subgroups defined according to sex and grade level. It was felt that knowledge of the relationships would yield insights into the reliability of some measurements and the predictive effectiveness of others. Computations were made for the total sample and for the specific subgroups to avoid the possibility of masking relationships in specific groups through heterogeneous grouping.

The eight correlation matrices computed are shown in Tables 16 through 23. Inspection of these tables reveals that the seven based on university student data are comparable, but Table 23, based on high school student data, contains no variables relating to grade point average. Such data were unavailable for the high school students in the study. The following paragraphs contain interpretive comments about the correlation analyses particularly applicable to the present study.

The complete matrices are included as resource data for other researchers using these or similar instruments in subsequent studies.

Survey of Study Habits and Attitudes Inventory: The coefficients of correlation between the two administrations of the Survey of Study Habits and Attitudes Inventory support the reliability of this device. Coefficients of stability ranging from .73 to .92 with a five week interval are relatively high for an inventory requiring only twenty minutes to complete.

That the Study Habits Inventory has predictive validity is indicated by the correlations between its scores and subsequent grade point averages obtained by the students. The correlation coefficient of .62 between freshmen scores on the Inventory and the grade point averages for the second quarter following the study skills course is particularly noteworthy.

The correlation coefficients between the first administration of the Inventory and the difference between the two administrations of the Inventory were negative, whereas the coefficients between the second administration and the difference were positive. The direction of this relationship is a function of the fact that those students with lowest initial scores tended to gain the most during the experimental period.

That the videotape study skills course content was related to the content of the Inventory is shown by the relatively high correlation coefficients between the second Inventory scores and the second knowledge test scores. This relationship is also supported by the negative correlation coefficients between times attended and second Inventory score and times attended and difference. In other words, those students who attended most frequently made the least Inventory score gain and had low second Inventory scores.

Attitude Toward the Course Scale: Although the attitude toward the course scale yielded generally lower test-retest coefficients of correlation than did the Survey of Study Habits and Attitudes, the retest correlations are satisfactory for an instrument requiring less than five minutes to complete. Perhaps because of the greater variability in freshman scores and high school scores, the retest coefficients for these samples were highest among the various subgroups.

Whereas the correlations between the attitude scale and the knowledge examinations are not high, the majority were positive. This suggests that those who were most favorable toward the course also obtained higher than average scores on the knowledge tests. No conclusive statements can be made about the relationship between the difference between attitude scale scores and measures of achievement.

Correlations between times attended and attitude scores tended to be negative. This suggests that some initial Hawthorne effect may have been operating in the experiment. Attitudes tended to decrease slightly between the two administrations.

Knowledge Tests: The positive correlations between the knowledge test scores and the number of times attended lend support to the validity of these examinations. As would be expected, slight positive correlations were found between the knowledge test scores and grade point averages. The coefficient of .71 between the second knowledge test score and the second next quarter grade point average for freshmen is unusually high.

Although the correlations between the first and second knowledge test scores are not high, the homogeneity of these two tests is apparent when their relatively low split half reliabilities (reported in the Methods section) are considered.

Grade Point Averages: In general, present grade point averages tended to be the most consistent predictor of subsequent grade point averages among the various measures for all groups. This finding can be explained in terms of size of behavior sample involved as well as similarity of schedules and instructional procedure from one quarter to the next. This finding parallels that of many other studies (26).

Summary Statements: The intercorrelations among the variables involved in the present study yield evidence supporting the validity and reliability of the measuring instruments used. Many additional relationships can be identified by subgroups through detailed inspection of Tables 16 through 23.

Table 16

INTERCORRELATIONS AMONG ALL VARIABLES-TOTAL SAMPLE

Total N=548; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST S-H	325 .80	321 -.15	387 .12	310 .15	273 .08	360 .15	241 .07	308 .34	366 .32	300 .20	306 -.01	249 -.05	428 -.07	100 .37	59 .08
2ND S-H		320 .47	320 .17	316 .15	269 .07	330 .16	251 .17	264 .24	321 .31	268 .21	262 .06	220 -.01	366 -.06	97 .28	53 -.08
S-H DIFF			280 .10	269 .21	240 .05	280 .20	213 .27	233 .03	273 .06	230 -.03	231 .14	198 -.03	309 -.19	72 .03	44 .06
1ST ATT				311 .45	309 -.50	367 .09	243 .01	292 .11	360 .04	298 -.07	290 .03	236 -.02	442 .03	116 -.02	64 -.03
2ND ATT					310 .55	309 .18	267 .15	245 .05	311 .00	266 -.02	243 .07	207 -.01	354 -.31	112 .16	61 .02
ATT DIFF						272 .13	229 .11	206 -.08	261 -.02	227 .06	204 -.01	178 -.01	300 -.24	93 .17	51 .10
1ST KNOW							261 .37	279 .23	345 .07	282 -.01	277 -.06	225 -.18	416 -.02	108 .23	57 .13
2ND KNOW								179 .16	231 .08	188 .05	177 .06	141 -.04	270 -.13	85 .38	44 .23
PREV CUM GPA									347 .44	276 .36	347 -.25	278 -.30	329 -.15	75 .42	74 -.36
PRES GPA										349 .46	348 .59	276 .05	409 .02	137 .50	74 .07
NEXT QTR GPA											274 .11	274 .64	352 .04	135 .51	74 .07
DIFF PRES-PREV												276 .29	327 -.05	75 .33	74 .46
DIFF NEXT-PREV													278 .03	75 .20	74 .52
TIMES ATT														137 -.28	74 -.23
2ND NEXT GPA															74 .69

Table 17

INTERCORRELATIONS AMONG ALL VARIABLES-MALE SAMPLE
Total N=331; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST S-H	191 .82	188 -.14	253 .10	187 .19	166 .11	214 .03	151 .00	188 .38	232 .33	178 .20	187 -.02	142 -.10	249 -.13	55 .30	25 .06
2ND S-H		188 .45	191 .23	190 .23	163 .09	197 .09	156 .09	159 .25	201 .29	154 .22	158 .04	121 .03	211 -.09	52 .15	21 -.26
S-H DIFF			167 .19	164 .19	148 -.03	164 .09	136 .13	139 -.04	166 .05	127 .06	138 .10	108 .09	176 .08	33 -.30	16 -.49
1ST ATT				184 .41	183 -.60	221 .03	151 -.03	180 .08	230 .01	180 -.09	179 .06	137 .04	259 -.01	66 -.11	29 -.10
2ND ATT					183 .46	192 .06	164 .02	145 -.01	191 -.03	150 .02	144 -.03	111 .03	204 .01	59 -.03	25 -.39
ATT DIFF						164 .10	142 .07	121 -.08	158 -.03	127 .13	120 -.10	96 .01	173 -.01	47 .10	20 -.12
1ST KNOW							161 .23	173 .16	224 .02	168 .02	172 -.16	126 -.16	245 .30	63 -.13	24 -.25
2ND KNOW								112 .04	150 .06	111 .06	111 -.04	78 .03	161 .19	47 .25	18 .21
PREV CUM GPA									214 .40	157 .31	214 -.34	159 -.37	196 -.10	34 .09	33 -.64
PRES GPA										210 .45	215 .59	158 .09	256 -.02	79 .47	33 .02
NEXT QTR GPA											156 .14	156 .65	212 -.01	77 .61	33 .25
DIFF PRES-PREV												158 .30	195 .01	34 .19	33 .39
DIFF NEXT-PREV													159 -.03	34 .44	33 .67
TIMES ATT														79 -.07	33 -.27
2ND NEXT GPA															33 .73

Table 18

INTERCORRELATIONS AMONG ALL VARIABLES-FEMALE SAMPLE
Total N=213; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST S-H	134	132	154	121	106	144	88	118	132	121	117	106	178	44	33
	.75	-.21	.18	.05	-.02	.34	.20	.31	.31	.22	.01	.05	.09	.43	.04
2ND S-H		132	128	125	105	132	45	104	119	114	103	99	154	45	32
		.49	.07	.08	.07	.26	.28	.26	.36	.20	.09	-.08	-.01	.48	.05
S-H DIFF			113	104	91	115	76	93	106	102	92	89	132	38	27
			-.01	.07	-.03	.12	.23	-.03	.09	-.16	.12	-.21	-.07	.11	.15
1ST ATT				126	125	144	42	111	129	118	110	99	181	50	35
				.51	-.33	.18	.15	.16	.06	-.03	-.04	-.11	.09	-.03	.02
2ND ATT					125	123	101	97	117	115	96	95	148	52	35
					.60	.02	.11	-.12	-.03	-.11	.10	-.05	-.10	-.13	-.02
ATT DIFF						106	86	83	101	99	82	81	125	45	30
						-.07	-.05	-.27	-.04	-.05	.06	-.03	-.09	-.01	.05
1ST KNOW							98	103	118	113	102	98	168	44	32
							.38	.23	.17	-.03	-.04	-.25	.33	.10	.09
2ND KNOW								65	79	76	64	62	108	37	25
								.20	.19	.09	.09	-.12	.38	.15	.08
PREV CUM GPA									130	118	130	118	131	40	40
									.50	.45	-.17	-.23	.03	.36	-.44
PRES GPA										138	130	1.17	151	57	40
										.47	.61	.00	.12	.56	.12
NEXT QTR GPA											117	117	139	57	40
											.05	.65	.12	.40	-.11
DIFF PRES-PREV												117	130	40	40
												.30	.10	.36	.53
DIFF NEXT-PREV													118	40	40
													.16	.04	.40
TIMES ATT														57	40
														-.05	.08
2ND NEXT GPA															40
															.68

Table 19

INTERCORRELATIONS AMONG ALL VARIABLES-FRESHMAN SAMPLE

Total N=186; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST S-H	120	119	131	113	96	125	86	123	157	125	124	95	145	29	3
	.76	-.07	.06	.20	.19	.03	.07	.32	.23	.13	-.13	-.16	-.09	.62	.88
2ND S-H		118	117	113	95	119	86	103	139	110	104	80	128	32	2
		.56	.20	.30	.25	.09	.20	.18	.28	.22	-.04	-.01	-.14	.47	-1.00
S-H DIFF			101	99	86	102	76	94	119	96	95	76	110	23	3
			.18	.37	.24	.33	.38	.08	.11	.03	.25	.01	-.31	.26	.94
1ST ATT				107	107	122	84	109	152	119	110	80	141	37	2
				.56	-.41	.14	.03	.21	-.04	-.08	-.03	-.06	-.03	.10	1.00
2ND ATT					108	112	90	89	132	109	90	71	122	38	2
					.62	.31	.44	.22	.08	.01	.16	-.02	-.55	.51	1.00
ATT DIFF						95	79	73	108	90	74	59	101	31	2
						.26	.40	-.08	.04	.03	.11	-.01	-.45	.47	1.00
1ST KNOW							91	108	147	115	109	81	135	35	2
							.44	.29	.02	-.02	-.08	-.20	.34	.40	1.00
2ND KNOW								68	98	75	68	48	88	27	--
								.23	.15	.00	.14	-.25	.52	.71	--
PREV CUM GPA									135	98	135	100	121	3	3
									.38	.26	-.23	-.45	-.18	.99	.83
PRES GPA										146	136	100	172	45	3
										.44	.49	-.11	.07	.56	.88
NEXT QTR GPA											98	97	146	44	3
											.04	.43	.06	.51	.01
DIFF PRES-PREV												100	122	3	3
												.28	-.14	.70	.95
DIFF NEXT-PREV													100	3	3
													.02	-.99	-.83
TIMES ATT														45	3
														-.41	-.96
2ND NEXT GPA															3
															.89

Table 20

INTERCORRELATIONS AMONG ALL VARIABLES-SOPHOMORE SAMPLE
Total N=150; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST	95	95	109	95	87	99	70	108	121	105	107	92	117	47	37
S-H	.73	-.36	.18	.20	.08	.19	.14	.30	.29	-.02	.01	-.27	-.26	.09	-.03
2ND		95	98	102	89	99	78	99	112	101	98	88	111	48	38
S-H		.38	.08	.06	.00	.12	.16	.19	.23	.05	.07	-.16	-.18	.10	-.12
S-H			86	86	78	84	64	85	94	85	84	76	93	37	31
DIFF			-.12	-.06	-.09	-.13	.12	-.02	-.01	.04	.04	.08	-.18	-.03	-.04
1ST				103	101	104	77	112	128	118	111	102	127	59	47
ATT				.49	-.38	.00	.04	.00	.09	-.06	.04	.00	.14	-.15	-.14
2ND					101	101	84	100	114	103	99	89	112	53	43
ATT					.61	.01	.22	-.14	-.09	-.03	-.03	.06	.13	-.25	-.12
ATT						89	73	87	100	94	86	81	99	47	38
DIFF						.08	.20	-.08	-.18	.04	-.10	.07	.11	-.17	.03
1ST							81	103	120	107	102	90	117	56	42
KNOW							.37	.16	.03	-.04	-.20	-.24	.13	.06	-.01
2ND								73	86	75	72	62	84	43	33
KNOW								.03	.02	.11	-.08	-.01	.26	.04	-.05
PREV CUM									129	113	129	112	125	51	50
GPA									.50	.43	-.36	-.32	-.15	.27	-.57
PRES										130	129	111	144	65	50
GPA										.43	.62	.04	-.09	.46	.04
NEXT QTR											112	112	131	64	50
GPA											.08	.65	-.04	.45	-.03
DIFF PRES-												111	124	51	50
PREV												.33	.12	.27	.41
DIFF NEXT-													112	51	50
PREV													.04	.19	.49
TIMES														65	50
ATT														.07	.03
2ND NEXT															50
GPA															.65

Table 21

INTERCORRELATIONS AMONG ALL VARIABLES-JUNIOR SAMPLE
Total N=68; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST S-H	47 .89	45 -.07	52 .22	43 .06	36 -.02	51 .21	32 .07	54 .50	61 .52	50 .53	53 .11	44 .33	61 .09	17 .41	13 .19
2ND S-H		45 .41	41 .41	41 .14	33 -.06	43 .24	31 .11	46 .53	50 .48	42 .34	45 .14	39 .03	50 .10	13 .07	11 -.01
S-H DIFF			39 .38	36 .28	32 -.15	38 .16	28 -.01	41 -.01	44 .13	37 -.28	40 .09	35 -.40	45 .03	9 -.41	8 -.22
1ST ATT				37 .19	37 -.74	44 .19	28 .15	47 .17	53 .17	42 -.02	46 .18	37 .02	53 .08	14 -.06	10 .20
2ND ATT					37 .46	41 .17	31 -.12	40 -.17	46 -.06	40 .05	39 .01	35 -.03	47 -.02	16 -.18	13 -.32
ATT DIFF						31 .07	24 -.27	31 -.13	36 .07	31 .13	30 .00	27 -.20	37 -.23	12 .26	9 -.13
1ST KNOW							33 .35	48 .21	54 .23	44 .15	47 -.03	39 -.01	55 .55	13 -.05	10 -.13
2ND KNOW								29 .16	35 .05	29 .01	29 .10	24 .31	35 .31	12 .15	9 .46
PREV CUM GPA									58 .37	46 .42	58 -.34	47 -.05	57 .12	15 -.17	15 -.58
PRES GPA										52 .50	58 .64	46 .21	64 .03	19 .53	15 .23
NEXT QTR GPA											45 .20	46 .89	53 .13	19 .59	15 .43
DIFF PRES-PREV												46 .29	56 -.10	15 .57	15 .62
DIFF NEXT-PREV													47 .11	15 .63	15 .78
TIMES ATT														19 -.46	15 -.34
2ND NEXT GPA															15 .90

Table 22

INTERCORRELATIONS AMONG ALL VARIABLES-SENIOR SAMPLE
Total N=26; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	PREV CUM GPA	PRES GPA	NEXT QTR GPA	DIFF PRES-PREV	DIFF NEXT-PREV	TIMES ATT	2ND NEXT GPA	DIFF 2ND NEXT PREV
1ST S-H	13 .92	12 -.11	20 .33	14 .12	13 .10	16 -.14	8 .11	21 .53	22 .36	19 .48	21 .07	18 .28	22 -.34	7 .38	6 .07
2ND S-H		12 .29	14 .27	14 -.21	12 -.03	15 .13	9 .04	14 .09	16 .42	15 .59	14 .19	13 .68	16 -.44	4 .57	2 1.00
S-H DIFF			11 .02	11 -.49	10 -.11	12 .40	7 -.13	11 -.29	12 -.14	12 -.24	11 -.19	11 -.03	12 -.05	3 -.98	2 -1.00
1ST ATT				14 -.02	14 -.59	18 .19	8 -.42	22 -.25	23 -.05	18 .14	22 -.03	17 .26	23 -.13	6 .67	5 .45
2ND ATT					14 .80	15 -.46	8 -.43	14 .49	16 .21	14 -.04	14 .02	12 .27	16 .31	5 -.85	3 -.99
ATT DIFF						14 -.40	7 .16	13 .48	14 .03	12 .39	13 -.33	11 .39	14 .40	3 -.38	2 -1.00
1ST KNOW							8 .37	18 -.21	19 .33	16 -.21	18 .52	15 -.30	19 .33	4 -.88	3 -.84
2ND KNOW								7 .48	9 -.36	9 .26	7 -.42	7 -.08	9 -.07	3 .65	-- --
PREV CUM GPA									24 .47	19 .50	24 .04	19 .01	24 -.12	6 .31	6 -.29
PRES GPA										21 .42	24 .86	19 .24	26 .04	8 .40	6 -.08
NEXT QTR GPA											19 .12	19 .87	21 .08	8 .65	6 .25
DIFF PRES-PREV												19 .11	24 .07	6 .09	6 .10
DIFF NEXT-PREV													19 .14	6 .32	6 .40
TIMES ATT														8 -.52	6 -.39
2ND NEXT GPA															6 .82

Table 23

INTERCORRELATIONS AMONG ALL VARIABLES-HIGH SCHOOL SAMPLE
Total N=102; N for each coefficient in cell

	2ND S-H	S-H DIFF	1ST ATT	2ND ATT	ATT DIFF	1ST KNOW	2ND KNOW	TIMES ATT
1ST S-H	41 .84	41 -.09	64 .09	38 .10	34 -.09	60 .42	37 .18	71 .14
2ND S-H		41 .46	42 .04	39 .11	33 .04	46 .33	39 .16	53 .03
S-H DIFF			35 .00	30 .22	27 .09	36 .38	30 .25	41 -.02
1ST ATT				43 .65	43 -.38	72 .15	39 .05	88 -.02
2ND ATT					43 .45	42 .22	46 -.12	50 -.23
ATT DIFF						37 .05	39 -.18	43 -.22
1ST KNOW							40 .28	82 .30
2ND KNOW								46 .27

Comments: At the end of each of the three quarters, ten students were chosen at random from among the enrollees and were asked to respond to eleven structured questions. Initially, the students were interviewed; but as the study progressed, it was found that the students could write their answers in essay format with greater ease. After the first quarter, the students from whom comments were to be obtained were given a questionnaire in a self-addressed return envelope and told to complete the questionnaire at their convenience. Comments were obtained from twenty-five students. Verbatim responses classified by question are reproduced in the following paragraphs.

Question 1 After having had a course on study skills, how do you feel about this type of course?

Response	Number
Worthwhile	7
Helpful-beneficial	6
Very informative	2
Provided insights on study habits	2
Should be required	1
a. of college freshmen	2
b. of high school seniors	1
Well presented	1
Very good	1
Great	1
Very necessary	1
Definite asset	1
Provides fundamentals	1
Realistic	1
Should be continued	1
Should be provided for every student	1
OK	1
Could be improved	1
Doesn't require a lot of time	1
Very useful	1

Question 2 What did you like best about the course?

Manner of presentation	5
The lecturer - Dr. Vattano	3
Recognition of faults	3
Insight on good study habits	3
Interesting presentation	3
Tapes on study habits and study methods	1
Tapes on studying and taking exams	1
Clarity of presentation	2

Response	Number
Tapes on note taking and reading textbooks	1
Tapes on learning, reinforcement, and when to seek counseling	1
Well presented	1
The idea of presentation on T.V.	1

Question 3 What was the worst part of the course?

No complaints	5
The time	3
Learning and reinforcement lectures hard to understand	2
No allowance for audience participation	2
No opportunity to ask questions	2
Repetition	1
Loud music before start of class	1
Some lectures better than others	1
First lecture lacked content of information	1
Filling out the questionnaire	1
Lack of detail in some lectures	1

Question 4 How do you think this course would compare with taking the same course with a conventiona lecture system?

More favorable	6
Yes-comparable	5
No-not as good	4
No opportunities to ask questions	2
Course is more interesting	1
Lack visual aids	1
Advantage of visual aids	1

Question 5 Do you feel any different about your study habits now than you did before you started this course?

Yes	21
No	none

All respondents answered yes except for one who mentioned that he couldn't answer the questionnaire fairly since he wasn't able to make all of the classes--therefore he did not answer question 5.

Able to organize and utilize study time better	5

Response	Number
Know how to study better	6
Knowledge of reason for poor grades and poor study habits	5
Increased conscientiousness toward studies	4
Conscientious application of new methods	2
Increased confidence in study abilities	

Question 6 How do you think this study skills course could be improved?

No comment - no suggestions	9
Include discussion periods	3
Yes	2
Should be lecture type	2
Presented earlier in the year and in a shorter period of time so that the methods can be utilized sooner by the student	1
Issue an outline showing format of future lectures	1
Have quizes	1
Give the student information of where to find the lecturer and when - office hours	1
Give a time schedule of all lectures	1
Hand back the tests	1
Have an advisor available to counsel individual problems	1
Fewer tests	1
More detail in lectures - more content	1

Question 7 Would you have any criticisms or comments concerning the instruction of this course by Dr. Vattano?

No (criticisms)	19
"No comments"	8
Very interesting	5
Dr. Vattano is the type of person needed for this type of presentation	3
Yes (criticisms)	2
Students need time to adjust to ETV	1
There was no comment about how to review material effectively	1
The first lecture needs to have more content	1
Shouldn't use the word "behooves" so much	1
Good job	1
He is a very intelligent and well-informed person	1
His insight into the principles involved, his clear organization of his material, his lively speaking style, and his sense of humor	1

Question 8 How did you feel about taking the exams and attitude scales?

Response	Number
Realized they were necessary	8
Didn't mind them	4
Good idea	3
They are a bother - didn't like them	3
Would liked to have had the results	2
Neutral	2
They were not like exams	1
Did not understand what they were for	1
A waste of time	1
Sometimes pertinent questions were asked	1
Are so many of them necessary?	1

Question 9 How would you suggest we get students interested in taking this course?

Have schedules (advertisements - information sheet on the course) of the program sent to every student prior to coming to the campus	6
Have instructors (faculty - advisors) announce and recommend the program in all classes especially during final week	
Word-of-mouth -- student endorsement	3
Collegian articles	3
Posters are no good	1
Make it a prerequisite for all freshman courses and make it a three credit course	2
No comment	2
Publicity and posters	1

Question 10 Do you think this course has or will improve your study habits?

Yes	21
No	none
No comment	1
Realized why poor grades and poor study habits	5
Allows for a new and fresh start	3
Allows for self-improvement in study habits and grades	3
Definitely	2
Pointed out areas needed for improvement	1

Question 11 Do you have any additional comments?

Response	Number
No comment	12
Comments of appreication for the course and personnel involved	4
Beneficial to the student	2
Worthwhile course - glad to have taken it	1
Have the student advisors push the course	1
CSU should make the course required since other schools do	1
Course should be continued	1
In a sense, the course is unreal	1
Have the course end three to four weeks before the finals	1

Summary of Comments: In general, almost all the comments about the course were highly favorable. Reaction to the lecturer was especially good. The number of students recommending that this course be required of all students is especially pertinent to the central question of the present study.

Although some students indicated that they would have preferred audience participation, reaction to the television methodology was generally favorable. Six of the twenty-five students mentioned television presentation as the best thing they liked about the course. When asked how they thought this course would compare with a conventional lecture system, only four of twenty-five students said they would prefer the conventional lecture.

Students did react unfavorably to some specific aspects of the course. Most negative reaction centered around completing the inventories and scales. This might have been alleviated by returning the papers to the students, but for the sake of security, tests were not returned. Although such a practice is not justifiable pedagogically, it did prevent materials from being passed from one experimental group to the next, thereby permitting more valid comparisons.

In summary, unstructured student comments strongly supported the television methodology used in the study. It can be concluded that evidence from this source indicates that videotaped lectures are effective for study skills instruction.

SUPPLEMENTARY DATA - FALL QUARTER 66

Although the experimental period for the present study was completed at the end of spring quarter 1966, there were so many requests to continue offering the study skills course, however, that a special section was established for the fall quarter, 1966. Two hundred nine students enrolled for the Fall Quarter 66 course which was offered twice a week at 4:00 p.m. for ten weeks. Mean scores for this group are shown in Table 24.

From inspection of this table it can be seen that results are roughly equivalent to those obtained during the formal experimental period. No tests of significance were computed for the data in Table 24.

Table 24

SUPPLEMENTARY DATA ON FALL QUARTER-'66 STUDY SKILLS STUDENTS
Total N=209

MEASURE	VALUE	
	Mean Score	
	1st Admin.	2nd Admin.
Survey of Study Habits and Attitudes	27.60 (174)	32.05 (107)
	Mean Score	
First Knowledge Examination	20.64 (118)	
	Mean Score	
Second Knowledge Examination	14.69 (70)	
	Mean Score	
Times Attended	7.70	

DISCUSSION

Although the present study involved primarily demonstration rather than experimental research, it was designed to provide partial answers to several questions and to test several hypotheses. Answers to the questions and evidence relating to specific hypotheses are presented in this section. The questions were as follows:

1. What is the reaction of students to a videotaped study skills course? Favorable

Reaction to the videotaped study skills course in the present study was highly favorable. The comments of students, their consistently high attendance and the demand for the course after the experimental period all support this assertion. In addition, scores on paper-and-pencil inventories were also favorable. More than two thirds of the students interviewed felt that they would prefer the television presentation to conventional lectures.

2. Will a videotaped study skills course meet the needs of students in a rapidly growing university? Yes

The significant changes in most groups viewing the videotaped course on study skills suggests that this is an excellent method to use in presenting material of this type. The preservation of good presentations is assured through videotaping. The flexibility of scheduling videotaped courses is virtually unlimited. The efficiency gained through showing a videotaped course constitutes a major financial saving. In addition, good camera work and visual aids result in high quality instruction.

3. What are the characteristics of students who profit most from experiencing a videotaped study skills course? Low achievement and freshman or sophomore standing

Although the answer to this question is neither detailed nor exhaustive, evidence suggests that low achievers and freshmen profit most from study skills courses. A logical explanation for this conclusion lies in the probably cause and effect relationship between study habits and grades. If a student has poor study habits it is likely that this will cause poor grades. Improving the study skills is therefor likely to result in grade improvement.

In the present study, seniors profited least from the course and freshmen profited most. It is suggested that the study habits of seniors are more fixed and difficult to modify than those of freshmen.

It is further suggested that greatest effectiveness might result from offering an appropriate study skills course at the high school level.

4. How should outside assignments be handled in a videotaped study skills course? In class

The present study was not designed to provide a conclusive answer to this question, but some evidence was obtained suggesting that integrative experiences following the lectures are highly appropriate. Although programed instruction was not used in any way in the present study, its possibilities should be explored for this purpose. The use of knowledge examinations permitting immediate feedback is also appropriate. Other possibilities might involve an interrupted lecture during which time students engage in written work. The present study strongly suggests that instructional television periods have adequate flexibility to accomodate as much integrative activity as is necessary for an effective leraning experience in the study skills area.

5. At what time of day can best results be obtained from televising a study skills course? No time investigated seems unsuitable

The present study was designed to determine whether "unpopular" times of the day (noon, 4:00 p.m. and evening) are suitable for telecasting a study skills course. No differences were noted among times of the day in terms of appropriateness for the course. This suggests that it may be possible to telecast such material at any time. Since students are seldom in classes at mealtimes, it should be possible to telecast at these times also by encouraging viewing in the library, in dormitories, in organized houses, and in student center lounges as well as in classrooms.

6. What factors contribute toward the motivation of students enrolled in a television study skills course? Instructor effectiveness and felt need

Throughout the present study, the importance of an effective television instructor was readily apparent. The success of a non-credit course is proportionate to the effectiveness of the instructor.

It appears that credit for a study skills course is not prerequisite for student motivation. Since such a course is developmental by its very nature, the key factor in motivation is desire for assistance. In the one condition in which attendance was required in the present study (football players), the course was least successful.

The following hypotheses were tested:

Hypothesis One: A videotaped study skills course will result in significant changes in score on a study skills inventory.

This hypothesis was verified in detail in the results section. To provide further interpretation, the national percentiles corresponding to raw scores on the Survey of Study Habits and Attitudes by group are as follows:

	Freshmen	Sophomores	Juniors	Seniors
Pretest Percentile	29	30	38	31
Final Percentile	40	44	48	39

	Below 2.00	2.00-2.50	2.50 and above
Pretest Percentile	27	30	57
Final Percentile	38	41	59

In the present study no systematic effort was made to have the content of the course parallel the content of the inventory used as the criterion. Because of this, the hypothesis is considered confirmed.

Hypothesis Two: Overall grade point averages of students enrolled in a videotaped study skills course will improve significantly after the course.

In the present study, evaluation of the course was accomplished according to the extent to which specific objectives were achieved. No control group per se was used for comparison purposes. To provide a general basis for comparison, however, the overall grade point averages obtained by the total student body during the three experimental quarters are shown below:

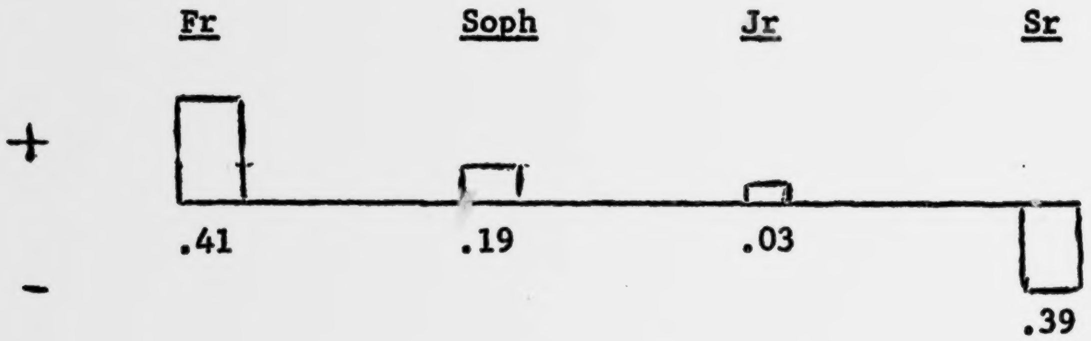
	Fall (N)	Winter (N)	Spring (N)
All Freshmen	2.09 (3,794)	2.15 (3,521)	2.14 (3,261)
Study Skills Freshmen	2.14	2.11	2.34
All Sophomores	2.33 (2,588)	2.44 (2,463)	2.44 (2,320)
Study Skills Sophomores	2.41	2.50	2.72
All Juniors	2.47 (2,093)	2.50 (2,002)	2.55 (2.080)
Study Skills Juniors	2.27	2.27	2.46
All Seniors	2.70 (1,814)	2.74 (1,637)	2.80 (1,695)
Study Skills Seniors	2.36	2.72	2.56
Total Students	2.34 (10,289)	2.40 (9,623)	2.43 (9,356)
Study Skills Students	2.28	2.34	2.67

From the foregoing, it can be seen that the study skills students did achieve at a higher level than the student body in general. From this analysis it is not possible to infer cause and effect. It may be that those in the study skills course were highly motivated and would have achieved at this actual level regardless of study skills enrollment. To control motivation, assignment of actual enrollees to an experimental and a control group would be appropriate.

Hypothesis Three: Freshmen will record greater gains in inventory scores and grade point averages after enrolling in a study skills course than other students.

Specific gains on the Survey of Study Habits and Attitudes have been presented in the results section. It will be recalled that greatest gains were made by freshmen and sophomores.

To summarize the changes in grade point average by class levels, the following graph has been prepared.



In the graph are shown the plotted differences by level between the average obtained two quarters after the course and the average obtained for the class of which the study skills students were a part. From this graph it can be seen that freshmen reflected the greatest proportionate gain.

Hypothesis Four: There will be no significant criterion differences among times of the day for offering a non-credit videotaped study skills course.

Of central importance to the present study was an exploration of the feasibility of using varying times of the day to offer a study skills course. From evidence collected in this study, it is concluded that the original hypothesis is confirmed and that study skills courses can be offered successfully at relatively "unpopular" hours during the academic day.

CONCLUSIONS - IMPLICATIONS

On the basis of the present study, the following conclusions are reached:

1. Students react favorably to study skills materials presented via videotaped television instruction.

2. Videotaped television instruction is an effective means for rapidly growing universities to meet the needs of their students in the study skills area.

3. Freshman and sophomore students with average or lower achievement reflect greatest benefits from enrolling in a videotaped study skills course. Students at all levels, however, show some improvement in study skills knowledge and grade point averages.

4. The learning of study skills material is enhanced when students are given meaningful assignments to perform in the classroom following a videotaped lecture on study skills.

5. Videotaped study skills instruction can be offered successfully throughout the day as well as at the evening hours.

6. Credit is not a necessary condition for successful study skills experiences. Rather such factors as the effectiveness of the instructor, desire to receive assistance and high quality instructional materials are basic to success in this area.

It is recommended that other colleges and universities than Colorado State University employ videotaped instruction for the presentation of non-credit coursework in the study skills area. Additional research to determine the feasibility of telecasting this course to residence halls, libraries and student lounges is appropriate. It is also appropriate to define further the kinds of activities in which students should engage immediately following a study skills videotaped lecture.

SUMMARY

The present study was undertaken to assess the desirability of using videotaped instruction to solve the problem of providing uniformly consistent study skills courses to university students. Previous research in the study skills area had indicated that

1. enrollment in a study skills course is usually followed by improvement in achievement.
2. a study skills course will be most beneficial to students desiring to take it.
3. students wishing to take a study skills course, but prevented from doing so, and, therefore, presumably of comparable motivation to those enrolled, fail to show significant improvement.
4. gains in student achievement following a study skills course are not closely related to length or specific content of the course.

No previous attempt had been made to assess the desirability of using educational television for teaching study skills courses.

Objectives: This study was undertaken to answer the following questions:

1. What is the reaction of students to a videotaped study skills course?
2. Will a videotaped study skills course meet the needs of students in a rapidly growing university?
3. What are the characteristics of students who profit most from experiencing a videotaped study skills course?
4. How should outside assignments be handled in a videotaped study skills course?
5. At what time of day can best results be obtained from televising a study skills course?
6. What factors (such as credit) contribute toward the motivation of students enrolled in a television study skills course?

Hypotheses: The following hypotheses were tested:

1. A videotaped study skills course will result in significant changes in score on a study skills inventory.
2. Overall grade point averages of students enrolled in a videotaped study skills course will improve significantly after the course.
3. Freshmen will record greater gains in inventory scores and grade point averages after enrolling in a study skills course than other students.

4. There will be no significant criterion differences among times of the day for offering a non-credit videotaped study skills course.

Method: The first phase of this study involved producing ten thirty-minute videotaped lectures:

1. Setting Your Sights
2. Scheduling Your Time
3. Study Environment
4. Learning and Reinforcement
5. Learning: An Active Process
6. How to Take Notes in Class and on Your Readings
7. How to Read a Textbook
8. Efficiency in Study
9. How to Take Exams
10. Where and When to Seek Counsel

A study skills inventory (the Survey of Study Habits and Attitudes), a specially constructed 18-item attitude toward the course scale, two 25-item specially constructed knowledge examinations, eleven interview questions, and cumulative grade point averages as well as averages obtained during and following enrollment in the course constituted the bases for course evaluation. Newly constructed instruments were analyzed for reliability and found to be satisfactory.

In the second phase, the videotaped course was offered to nine groups throughout four academic quarters. Three kinds of conditions were involved in the experimentation: time of day, frequency of telecasts per week, and type of enrollment (voluntary and non-voluntary). Approximately 700 students took part in the study.

Administration of the evaluation instruments followed the same pattern regardless of the group or condition involved. The basic pattern was

First Session - Survey of Study Habits and Attitudes
Second Session - Attitudes Scale
Fifth Session - First Knowledge Examination
Ninth Session - Second Knowledge Examination and Attitude Scale
Tenth Session - Survey of Study Habits and Attitudes
Post Course - Interview Questions

In analyzing the data, all measures were first intercorrelated by subgroups. Gain in inventory score, change in attitude scale scores and changes in grade point average were tested with the paired t-test. Differences among subgroup means on the first and second attitude scale administration and the first and second knowledge examinations were tested with the analysis of variance. Differences among second inventory scores and grade point averages for the subgroups with pre-test measures controlled were analyzed with the analysis of covariance. Subgroups included male-female; freshmen, sophomore, junior, and senior; cumulative average below 2.00, between 2.00 and 2.50, and above 2.50; and fall quarter noon twice weekly, fall quarter 4:00 p.m. twice weekly, winter quarter 4:00 p.m. daily, winter quarter 7:00 p.m. daily, winter quarter 7:00 p.m. twice weekly, spring quarter 7:00 p.m. twice weekly, spring quarter high school, spring quarter required attendance of football players. Interview responses were analyzed according to the frequency with which specific responses were given by a sample of students from each condition.

Results: When the inventory scores were used as a criterion, it was found that the total group, both sexes, all achievement levels, three class levels, and five condition categories changed to a highly significant degree during the course. The 7:00 p.m. spring category changed significantly but not highly so. The high school students and the football players whose enrollment was required did not change significantly. When attitude toward the course was used as a criterion, some "progressive disenchantment" was recorded for most subgroups.

Highly significant increases in grade point average were observed in several subgroups throughout the year, but not for students having cumulative grade point averages above 2.50 prior to the course.

When the subgroups were compared cross sectionally, no significant differences were found in attendance. Females were significantly more favorable toward the course than males. Whereas differences among achievement levels were highly significant for the first knowledge examination, these differences did not exist on the second examination. No significant differences among conditions by subgroups were found.

When adjustment in the criterion mean was made to control for individual differences in pretest measures by the use of covariance, no significant differences among conditions or between sexes were observed for inventory scores or grade point averages. Students with cumulative grade point averages below 2.00 and between 2.00 and 2.50 gained highly significantly more than students with averages above 2.50. Freshmen and students with cumulative averages below 2.00 reflected gains more quickly than other subgroups.

The intercorrelations among the variables involved in the present study yielded evidence supporting the reliability and validity of the measures used. Test-retest coefficients tended to be relatively high and the inventory scores correlated positively with grades, times attended, and knowledge examination scores.

In general, almost all the interview comments about the course were highly favorable. Reaction to the lecturer was expecially good. The number of students feeling that this course should be required of all students was high.

Although some students indicated that they would have preferred audience participation, reaction to the television methodology was generally favorable. Twenty-five per cent of the students interviewed mentioned television presentation as "the best thing they liked about the course." When asked how they thought this course would compare with a conventional lecture method, only twenty per cent said they would prefer the conventional lecture.

Conclusions: On the basis of the present study, the following conclusions are reached:

1. Students react favorably to study skills materials presented via videotaped television instruction.
2. Videotaped television instruction is an effective means for rapidly growing universities to meet the needs of their students in the study skills area.
3. Lower class students with average or lower achievement reflect greatest benefits from enrolling in a videotaped study skills course. Students at all levels, however, show some improvement in study skills knowledge and grade point average after enrolling in a study skills course.
4. The learning of study skills material is enhanced when students are given meaningful assignments to perform in the classroom following a videotaped lecture on study skills.
5. Videotaped study skills instruction can be offered successfully throughout the day as well as at the evening hours.
6. Credit is not a necessary condition for successful study skills experiences. Rather such factors as the effectiveness of the instructor, desire to receive assistance and high quality instructional materials are basic to success in this area.

It is recommended that other colleges and universities than Colorado State University employ videotaped instruction for the presentation of non-credit coursework in the study skills area. Additional research to determine the feasibility of telecasting this course to residence halls, libraries and student lounges is appropriate. It is also appropriate to define further the kinds of activities in which students should engage immediately following a study skills videotaped lecture.

REFERENCES

1. Barbe, W. B. "The Effectiveness of Work in Remedial Reading at the College Level," Journal of Educatinnal Psychology. XLIII, 1952. p. 229-237.

2. Behrens, H. D. "Effects of a 'How to Study' Course," Journal of Higher Education. VI, 1935. p. 195-202.

3. Blake, W. S. "Study-skills Programs," Journal of Higher Education. XXVI, 1955. p. 97-99, 114.

4. Brown, C. W. "The Study Habits of Failing and Successful Students in the First Two Years of College," Journal of Experimental Education. IX, 1941. p. 205-208.

5. Brown, W. F., and Holtzman, W. H. "Study Attitude Questionnaire for Predicting Academic Success," Journal of Educational Psychology. 1955.

6. Chahbazi, P. "Analysis of Cornell Orientation Inventory Items of Study Habits and Their Relative Value in Prediction of College Achievement," Journal of Educational Research. LI, 1957, p. 117-128.

7. Charles, D. C. "College Reading and Study Improvement," Journal of Higher Education. XXII, 1951. p. 265-267.

8. Creaser, J. W. "Evaluation of a College Study Habits Course Using Scores on a Q-Sort as the Criterion," Journal of Educational Research. LVI, 1963. p. 272-274.

9. Di Lorenzo, L. T. "The Discriminating Effects of a College 'How to Study' Course," Journal of Educational Research. LVII, 1964. p. 472-475.

10. Di Michael, S. G. "The Transfer Effects of a How-to-Study Course Upon Different I.Q. Levels and Various Academic Subjects," Journal of Educational Psychology. XXXIV, 1943. p. 166-175.

11. Eckert, R. E., and Jones, E. S. "Longtime Effects of Training College Students How to Study," School and Society. IXII, 1935. p. 685-688.

12. Entwisle, Doris R. "Evaluations of Study-skills Courses: A Review," Journal of Educational Research. LIII, 1960. p. 243-251.

13. Fahey, G. L., and Waller, C. H. "An Experimental Investigation of the Effectiveness of Certain Diagnostic and Guidance Procedures When Applied in Cases of Low School Achievement," Journal of Educational Research. XXXIV, 1941. p. 335-345.

14. Holtzman, W. H., Brown, W. F., and Farquhar, W. G. "The Survey of Study Habits and Attitudes: A New Instrument for the Prediction of Academic Success," Educational and Psychological Measurement. XIV, 1954. p. 726-732.

15. Jackson, B. B. "Diagnostic and Remedial Measures in Study Skills," Educational and Psychological Measurement. IX, 1949. p. 536-543.

16. Kilby, R. W. "The Relation of a Remedial Reading Program to Scholastic Success in College," Journal of Educational Psychology. XXXVI, 1945. p. 513-534.

17. Kingston, A. J., and George, C. E. "The Effectiveness of Reading Training at the College Level," Journal of Educational Research. XLVIII, 1955. p. 467-471.

18. Laycock, S. R., and Russell, D. H. "An Analysis of Thirty-eight How-to-Study Manuals," School Review. XLIX, 1941. p. 370-379.

19. Matthews, C. O., and Toepfer, Nora. "Comparison of Principles and Practices of Study," School Review. XLIV, 1936. p. 184-192.

20. McDonald, A. S. "Influence of a College Reading Improvement Program on Academic Performance," Journal of Educational Psychology. XLVIII, 1957. p. 171-181.

21. McGinnis, D. "Corrective Reading: A Means of Increasing Scholastic Attainment at the College Level," Journal of Educational Psychology. XLII, 1951. p. 166-173.

22. Michael, W. B., and Reeder, D. E. "The Development and Validation of a Preliminary Form of a Study-Habit Inventory," Educational and Psychological Measurement. XII, 1952. p. 236-247.

23. Mouly, G. J. "A Study of the Effects of a Remedial Reading Program on Academic Grades at the College Level," Journal of Educational Psychology. XLIII, 1952. p. 459-466.

24. Murphy, H. D., and Davis, F. B. "A Note on the Measurement of Progress in Remedial Reading," Peabody Journal of Education. XXVII, 1949. p. 108-111.

25. Myers, R. C., and Schultz, D. G. "Predicting Academic Achievement with a New Aptitude-Interest Questionnaire," Educational and Psychological Measurement. X, 1950. p. 654-663.

26. Neidt, C. O. Literature Review of Research Involving Non-Intellective Factors in Learning, The Relationship of New Educational Media to Non-Intellective Factors in Learning - Phase I. Unpublished report, Title VII Project Number C-1139, Office of Education, U. S. Department of Health, Education, and Welfare. 1963. 423p.

27. Neidt, C. O. Changes in Attitudes During Learning, The Relationship of New Educational Media to Non-Intellective Factors in Learning - Phase II. Unpublished report, Title VII Project Number C-1139, Office of Education, U. S. Department of Health, Education, and Welfare. December, 1964. 134p.

28. Neidt, C. O., and French, J. L. "Reaction of High School Students to Television Teacher," The Journal of Genetic Psychology. C, 1962. p. 337-344.

29. Neidt, C. O., and French, J. L. Reaction of High School Students to Television Teachers. Unpublished report, Financed in part by a grant-in-aid from the Educational Television and Radio Center, Ann Arbor, Michigan. 1958. 191p.

30. Noal, M. S. "Effectiveness of Different Study Methods," Journal of Educational Research. LVI, 1962. p. 51-52.

31. Ofman, W. "The Study Habits Seminar: A Statement of Viewpoint and Method," Personnel and Guidance Journal. XLII, 1964. p. 1027-1029.

32. Ranson, M. K. "An Evaluation of Certain Aspects of the Reading and Study Program at the University of Missouri," Journal of Educational Research. XLVIII, 1955. p. 443-454.

33. Reeder, C. W. "Study Habits," School and Society. XLII, 1935. p. 413-415.

34. Richlin, M., and Tresselt, M. G. "Further Research on the Differential Prognosis in a College Study-Methods Course," American Psychologist. VI, 1951. p. 368-369.

35. Robinson, F. P. "Two Quarries with a Single Stone," Journal of Higher Education. XVI, 1945. p. 201-206.

36. Shaw, J. G. "An Evaluation of a Study-Skills Course," Personnel Guidance Journal. XXXIII, 1955. p. 465-468.

37. Schlesser, G. E., and Young, C. W. "Study and Work Habits," School Review. LIII, 1945. p. 85-89.

38. Schultz, D. G., and Green, B. F., Jr. "Predicting Academic Achievement with a New Aptitude-Interest Questionnaire-II," Educational and Psychological Measurement. XIII, 1953. p. 54-56.

39. Sharp, S. L. "Effective Study Methods," Journal of Higher Education. XIV, 1943. p. 271-272.

40. Sheldon, W. "An Evaluation of an Experimental Reading Program for Medical Students," Journal of Educational Psychology. XXXIX, 1948. p. 298-303.

41. Simpson, R. G. "The Reading Laboratory as a Service Unit in College," School and Society. LV, 1942. p. 621-623.

42. Smith, D. E. P., and Wood, R. L. "Reading Improvement and College Grades: A Follow-up," Journal of Educational Psychology. XLVI, 1955. p. 151-159.

43. Snow, J. G. "An Evaluation of a Study Skills Course," Personnel and Guidance Journal. XXXIII, 1955. p. 465-468.

44. Symonds, P. "Methods of Investigation of Study Habits," School and Society. XXIV, 1926. p. 145-152.

45. Tiebout, H. M. "The Misnamed Lazy Student," Educational Record. XXIV, 1943. p. 113-129.

46. Tresselt, M. E. "The How-to-Study Course," Journal of Psychology. XXXIV, 1952. p. 31-35.

47. Tresselt, M. E. and Richlin, M. "Differential Prognosis in a College Study Methods Course," Journal of Psychology. XXXI, 1951. p. 81-89.

48. Turrell, A. M. "Study Methods and Scholarship Improvement," Junior College Journal. VII, 1937. p. 295-301.

49. Wert, J. E.; Neidt, C. O.; and Ahmann, J. S. Statistical Methods in Educational and Psychological Research. New York: Appleton-Century-Crofts, Inc. 1954. 435p.

50. Willey, D. S., and Thomson, C. W. "Effective Reading and Grade Point Improvement with College Freshmen," School and Society. LXXXIII, 1956. p. 133-134.

51. Winter, J. E. "An Experimental Study of the Effect on Learning of Supervised and Unsupervised Study Among College Freshmen," Journal of Educational Psychology. XXVII, 1936. p. 111-118.

52. Wittenborn, J. P. "Classes in Remedial Reading and Study Habits," *Journal of Educational Research*. XXXVII, 1944. p. 571-586.

APPENDICES

A. Study Skills Questionnaire

B. First Knowledge Examination

C. Second Knowledge Examination

D. Analysis of Variance Tables

E. Analysis of Covariance Tables

____

NAME (Last, First, Middle)

STUDY SKILLS QUESTIONNAIRE

This scale has been prepared so that you can indicate how you feel about your study skills class. PLEASE RESPOND TO EVERY ITEM. In each case, draw a circle around the letter which represents your own reaction as follows:

SA if you strongly agree with the statement
A if you agree but not strongly so
N if you are neutral or undecided
D if you disagree but not strongly so
SD if you strongly disagree with the statement

Remember, the only correct answer is the one which actually represents how you feel about this study skills course.

1. I am enthusiastic about the way this course is being taught . . . . SA A N D SD
2. The topics covered in this course are worthwhile . . . . SA A N D SD
3. I am disappointed with what we are learning in this course . . . . SA A N D SD
4. Educational Television is a good method for presenting this course . . . . SA A N D SD
5. The material presented in this course is better than I expected . . . . SA A N D SD
6. I would rather learn about study skills in a regular lecture-type class . . . . SA A N D SD
7. This course could be improved greatly . . . . SA A N D SD
8. I am glad I registered for this course . . . . SA A N D SD
9. I did not think I would learn as much in this course as I have . . . . SA A N D SD
10. The TV tapes in this course are boring . . . . SA A N D SD
11. My attitude toward this course is pretty unfavorable . . SA A N D SD
12. The material in this course will be very helpful for me SA A N D SD
13. I feel this course should be offered again next quarter SA A N D SD
14. I would certainly recommend this course to my friends. . SA A N D SD
15. These study skills lectures are rather interesting . . . SA A N D SD
16. This course is a waste of my time. . . . . SA A N D SD
17. I am satisfied with the methods used in teaching this class . . . . SA A N D SD
18. The method of instructing this class could be greatly improved . . . . SA A N D SD

NAME (Last, First)

Knowledge Test #1

To evaluate this course it is necessary that we measure what you have learned thus far. Will you please respond to the following items by marking the correct answer on the test booklet. Your score will be posted prior to the next class.

1. Study skills has its basis in the study of
   a. learning
   b. textbooks
   c. psychology
   d. graduate students

2. The difference between study and effective study is
   a. the amount of time spent studying
   b. how you listen in class
   c. the proper use of your time
   d. proper attitude in college

3. Most research indicates that study skills courses will
   a. improve grades from 1 to 2 letter grades
   b. not help grades very much
   c. will improve grades for a few students
   d. will improve most students' grades 1/2 to 1 letter grade

4. The people who study the most
   a. get the best grades
   b. have more fun at college
   c. are smart for doing so
   d. do not get the best grades

5. Motivation, according to Dr. Vattano, is related to
   a. major in school
   b. age at graduation from college
   c. goals
   d. income of parents

6. According to the lecture, "If you want something done, ask a
   a. man with time
   b. smart man
   c. man who is motivated
   d. busy man

7. Dr. Vattano emphasized similarities between time and
   a. school
   b. classes
   d. money
   d. distance

8. Dr. Vattano finds students are deceived by the small amount of
   a. class time in college
   b. recreation time in college
   c. time necessary to read assignments
   d. time available from tutors

9. The time schedule recommended in the lecture has an area at the bottom for
   a. a scratch pad
   b. events that occur on certain days
   c. keeping telephone numbers
   d. events that occur at certain hours

10. The irreversibility of time means, according to Dr. Vattano,
   a. it goes one direction only
   b. it is a scarce commodity
   c. it is much like money
   d. things happen only once

11. Dr. Vattano suggests you study in
   a. your room
   b. the student lounge
   c. your bed
   d. the library

12. An example of an internal stimulus is
   a. your roommate
   b. poor lighting over your desk
   c. a fight with your steady boyfriend (girlfriend)
   d. coffee at the student center

13. Your study area should be
   a. nice and cozy
   b. in the corner
   c. spacious
   d. in your room for convenience

14. Which of the following is not included in Dr. Vattano's list of "features of a good study environment?"
   a. comfortable
   b. quiet
   c. available
   d. spacious

15. Classes should be arranged
   a. with all your classes in the morning so you can study in the afternoon
   b. with all your classes in the afternoon so you can study in the morning
   c. spread out between 8 and 5 in two-hour shifts
   d. with time between classes

16. The optimum effectiveness is achieved by
   a. staying ahead in courses
   b. keeping just one chapter behind the instructor
   c. cramming just before exams
   d. keeping even with your assignments so your study coincides with the lectures

17. The effective student
    a. listens and then remembers
    b. writes things down
    c. doesn't have to worry about remembering things
    d. has so many things to do he could never remember all of them

18. Positive transfer means to
    a. use old knowledge in a future situation
    b. practice multiple choice questions for an essay exam
    c. prepare for an essay by reading
    d. read the material before you study for the exam

19. The effective student
    a. doesn't join many organizations
    b. works hard and plays hard
    c. minimizes recreation
    d. disciplines himself to a schedule of steady studying

20. If you have a personal problem
    a. study first then solve the problem
    b. don't study
    c. solve the problem and then study
    d. don't let it affect your study

21. During periods of deep sleep
    a. no learning takes place
    b. the person continues to learn
    c. interference is least and concentration is highest
    d. learning is accomplished by images

22. A recommended technique for making your studying an active process is one called
    a. recall-recite
    b. three readings and two recalls
    c. study-copy-recall
    d. S Q 3R

23. Dr. Vattano suggests you should be
    a. relazed while studying
    b. sympathetically dominated
    c. parasympathetically dominated
    d. free from all strain

24. "Recite" as described by Dr. Vattano means to
    a. underline
    b. re-read
    c. talk or write about the material
    d. read several author's points of view

25. Efficiency is gained through
    a. lengthy reviews
    b. frequent reviews
    c. intensive reviews before exams
    d. delayed reviews

____
NAME (Last, First)

Knowledge Test #2

Will you please respond to the following items by marking the correct answer on the test booklet.

1. Learning is a more or less permanent change in behavior due to
   - a. training
   - b. study
   - c. reward
   - d. experience

2. Writing questions and then answering them is means of providing
   - a. immediate reinforcement
   - b. positive transfer
   - c. delayed reinforcement
   - d. plateaus

3. Learning will be accelerated by having reinforcement
   - a. as soon as possible
   - b. when your exams are returned
   - c. in large amounts
   - d. before you respond

4. You should know
   - a. whether you were right or wrong
   - b. how right or wrong you were
   - c. just what your correct responses were
   - d. just what your incorrect responses were

5. Repetition of reinforcement
   - a. will bore the organism
   - b. should be positively accelerated
   - c. will maintain the learning level
   - d. will improve learning

6. Dr. Vattano suggests the biggest improvements can be made in reading through a change in
   - a. purpose
   - b. method
   - c. nature of material
   - d. reader habits

7. The sophisticated person reviews a book according to Dr. Vattano, by
   - a. thumbing through the pages
   - b. reading the table of contents
   - c. checking the topics in the index
   - d. finding an expert's critique

8. The nature of the material usually dictates your
   a. purpose
   b. method
   c. reader habits and method
   d. purpose and method

9. Dr. Vattano says that retention in most cases
   a. does not relate with speed
   b. is decreased with speed
   c. improves with speed
   d. cannot be improved

10. You should be able to double your reading speed in about
   a. two months
   b. two weeks
   c. three weeks
   d. three months

11. Dr. Vattano does not discuss taking notes
   a. in class
   b. on readings
   c. on speeches
   d. for research projects

12. Dr. Vattano suggests you use which of these for taking notes?
   a. spiral notebook for each course
   b. stenographic pad
   c. loose leaf notebook
   d. tablet

13. Dr. Vattano suggests your notes should
   a. include everything said
   b. be in outline form
   c. be complete sentences
   d. be in pencil

14. You should
   a. never recopy your notes
   b. always recopy your notes
   c. sometimes recopy your notes
   d. let someone else recopy your notes

15. For Dr. Vattano, examining plants on the way home from class when you are taking Botany was an example of
   a. predicting
   b. introspecting
   c. inspecting
   d. reflecting

16. Objective questions are, from the instructor's standpoint,
   a. easy to prepare; easy to score
   b. difficult to prepare; difficult to score
   c. easy to prepare; difficult to score
   d. difficult to prepare; easy to score

17. Contrary to common notion
    a. it is impossible to be over motivated
    b. best to be slightly under motivated
    c. best to be highly motivated
    d. there is an optimal level of motivation

18. Dr. Vattano suggests the best criterion by which to measure the effectiveness of a student would be his
    a. time schedule
    b. reading habits
    c. class attendance
    d. notes

19. Research shows changing answers when you review your exam
    a. improves scores 2 to 1
    b. reduces scores 3 to 1
    c. improves scores 3 to 1
    d. reduces scores 2 to 1

20. Test sophistication is
    a. helpful if you have to guess
    b. a substitute of knowledge
    c. more common in Juniors than Seniors
    d. knowing the type of questions you will be asked

Table 25

ANALYSIS OF VARIANCE OF 1ST ATTITUDE SCORES BETWEEN SEXES

N=456

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	1	330.1	330.1	5.256*
Within	454	28508.9	62.8	
Total	455	28839.0		

Table 26

ANALYSIS OF VARIANCE OF 1ST ATTITUDE SCORES AMONG CLASS LEVELS

N=359

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	3	430.1	143.4	2.258*
Within	355	22549.8	63.5	
Total	358	22979.9		

Table 27

ANALYSIS OF VARIANCE OF 1ST ATTITUDE SCORES AMONG PREVIOUS GPA CATEGORIES

N=293

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	248.9	124.5	1.904
Within	290	18979.3	65.4	
Total	292	19228.2		

Table 28

ANALYSIS OF VARIANCE OF 1ST ATTITUDE SCORES AMONG UNIVERSITY CONDITIONS

N=354

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	5	415.9	83.2	1.447
Within	348	20019.0	57.5	
Total	353	20434.9		

Table 29

ANALYSIS OF VARIANCE OF 1ST ATTITUDE SCORES AMONG QUARTERS
N=354

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	323.2	161.6	2.82
Within	351	20111.7	57.3	
Total	353	20434.9		

Table 30

ANALYSIS OF VARIANCE OF 2ND ATTITUDE BETWEEN SEXES
N=365

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	1	638.2	638.2	12.042**
Within	363	19256.7	53.0	
Total	364	19894.9		

Table 31

ANALYSIS OF VARIANCE OF 2ND ATTITUDE AMONG CLASS LEVELS
N=310

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	3	358.5	119.5	1.949
Within	306	18755.4	61.3	
Total	309	19113.9		

Table 32

ANALYSIS OF VARIANCE OF 2ND ATTITUDE AMONG PREVIOUS GPA CATEGORIES

N=247

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	20.7	10.4	.152
Within	244	16680.7	68.4	
Total	246	16701.4		

Table 33

ANALYSIS OF VARIANCE OF 2ND ATTITUDE AMONG UNIVERSITY CONDITIONS

N=303

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	5	346.2	69.2	1.421
Within	297	14463.8	48.7	
Total	302	14810.0		

Table 34

ANALYSIS OF VARIANCE OF 2ND ATTITUDE SCORES AMONG QUARTERS
N=303

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	164.2	82.1	1.68
Within	300	14645.8	48.8	
Total	302	14810.0		

Table 35

ANALYSIS OF VARIANCE OF 1ST KNOWLEDGE SCORES BETWEEN SEXES

N=431

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	1	0.0	0.0	0.000
Within	429	2085.7	4.9	
Total	430	2085.7		

Table 36

ANALYSIS OF VARIANCE OF 1ST KNOWLEDGE SCORES AMONG CLASS LEVELS

N=343

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	3	21.5	7.2	1.412
Within	339	1720.4	5.1	
Total	342	1741.9		

Table 37

ANALYSIS OF VARIANCE OF 1ST KNOWLEDGE SCORES AMONG
PREVIOUS GPA CATEGORIES
N=280

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	59.4	29.7	5.712**
Within	277	1446.0	5.2	
Total	279	1505.4		

Table 38

ANALYSIS OF VARIANCE OF 1ST KNOWLEDGE SCORES AMONG
CONDITIONS
N=333

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	5	33.0	6.6	1.610
Within	332	1328.6	4.1	
Total	337	1361.6		

Table 39

ANALYSIS OF VARIANCE OF 1ST KNOWLEDGE SCORES AMONG QUARTERS

N=333

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	12.0	6.0	1.46
Within	330	1349.6	4.1	
Total	332	1361.6		

Table 40

ANALYSIS OF VARIANCE OF 2ND KNOWLEDGE SCORES BETWEEN SEXES
N=282

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	1	36.7	36.7	5.919*
Within	280	1724.2	6.2	
Total	281	1760.9		

Table 41

ANALYSIS OF VARIANCE OF 2ND KNOWLEDGE SCORES AMONG CLASS LEVELS
N=229

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	3	1.0	0.3	.050
Within	225	1352.0	6.0	
Total	228	1353.0		

Table 42

ANALYSIS OF VARIANCE OF 2ND KNOWLEDGE SCORES AMONG PREVIOUS GPA CATEGORIES

N=180

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	8.5	4.3	.705
Within	177	1087.1	6.1	
Total	179	1095.6		

Table 43

ANALYSIS OF VARIANCE OF 2ND KNOWLEDGE SCORES AMONG UNIVERSITY CONDITIONS

N=223

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	5	12.7	2.5	.490
Within	217	1101.2	5.1	
Total	222	1113.9		

Table 44

ANALYSIS OF VARIANCE OF 2ND KNOWLEDGE SCORES AMONG QUARTERS
N=223

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F
Between	2	6.9	3.5	.70
Within	220	1107.0	5.0	
Total	222	1113.9		

Table 45

ANALYSIS OF COVARIANCE OF SECOND SURVEY OF STUDY HABITS AND ATTITUDES BETWEEN SEXES WITH FIRST SURVEY SCORE HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	1	53.89	53.89	.423
Within	323	41143.65	127.38	
Total	324	41197.55		

Table 46

ANALYSIS OF COVARIANCE OF SECOND SURVEY OF STUDY HABITS AND ATTITUDES AMONG CLASS LEVELS WITH FIRST SURVEY OF STUDY HABITS AND ATTITUDES HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	3	251.47	83.82	.683
Within	271	33242.52	122.67	
Total	274	33494.00		

Table 47

ANALYSIS OF COVARIANCE OF SECOND SURVEY OF STUDY HABITS AND ATTITUDES AMONG ACHIEVEMENT LEVELS WITH FIRST SURVEY OF STUDY HABITS AND ATTITUDES HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	2	1568.41	784.21	7.016**
Within	232	25932.36	111.78	
Total	234	27500.78		

**Significant at .01 level.

Table 48

ANALYSIS OF VARIANCE OF SECOND SURVEY OF STUDY HABITS AND ATTITUDES AMONG CONDITIONS WITH FIRST SURVEY OF STUDY HABITS AND ATTITUDES HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	5	549.43	109.89	.846
Within	266	34539.03	129.85	
Total	271	35088.46		

Table 49

ANALYSIS OF COVARIANCE OF PRESENT GPA BETWEEN SEXES WITH PREVIOUS GPA HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	1	.74	.74	1.423
Within	342	179.22	.52	
Total	343	179.96		

Table 50

ANALYSIS OF COVARIANCE OF PRESENT GPA AMONG CLASS LEVELS WITH PREVIOUS GPA HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	3	4.78	1.59	3.118
Within	342	174.43	.51	
Total	345	179.22		

*Significant at .05 level.

Table 51

ANALYSIS OF COVARIANCE OF PRESENT GPA AMONG ACHIEVEMENT LEVELS WITH PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	2	33.97	16.99	39.512**
Within	342	145.39	.43	
Total	344	179.35		

**Significant at .01 level.

Table 52

ANALYSIS OF COVARIANCE OF PRESENT GPA AMONG CONDITIONS WITH PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	5	2.84	.57	1.075
Within	319	168.49	.53	
Total	324	171.33		

Table 53

ANALYSIS OF COVARIANCE OF NEXT QUARTER GPA BETWEEN SEXES WITH PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	1	.03	.03	.053
Within	273	156.11	.57	
Total	274	156.14		

Table 54

ANALYSIS OF COVARIANCE OF NEXT QUARTER GPA AMONG CLASS LEVELS WITH PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	3	10.97	3.66	6.906**
Within	272	145.24	.53	
Total	275	156.21		

**Significant at .ol level.

Table 55

ANALYSIS OF COVARIANCE OF NEXT QUARTER GPA AMONG ACHIEVEMENT LEVELS WITH PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	2	18.46	9.23	18.098**
Within	271	137.70	.51	
Total	273	156.17		

**Significant at .01 level.

Table 56

ANALYSIS OF COVARIANCE OF NEXT QUARTER GPA AMONG CONDITIONS WITH PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	5	5.47	1.09	1.946
Within	269	150.67	.56	
Total	274	156.14		

Table 57

ANALYSIS OF COVARIANCE OF SECOND NEXT GPA BETWEEN SEXES WITH PREVIOUS GPA HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	1	.24	.24	.686
Within	72	25.36	.35	
Total	73	25.60		

Table 58

ANALYSIS OF COVARIANCE OF SECOND NEXT GPA AMONG CLASS LEVELS WITH PREVIOUS GPA HELD CONSTANT

	RESIDUAL			
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	3	1.09	.36	.818
Within	71	31.19	.44	
Total	74	32.28		

Table 59

ANALYSIS OF COVARIANCE OF
SECOND NEXT GPA AMONG ACHIEVEMENT LEVELS WITH
PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	2	1.92	.96	2.286
Within	72	30.36	.42	
Total	74	32.28		

Table 60

ANALYSIS OF COVARIANCE OF
SECOND NEXT GPA AMONG CONDITIONS WITH
PREVIOUS GPA HELD CONSTANT

		RESIDUAL		
SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F
Between	5	1.13	.226	.628
Within	68	24.47	.360	
Total	73	25.60		